

# THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

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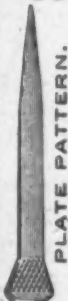
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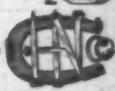
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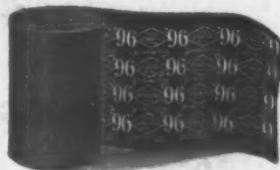
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# THE IRON AGE

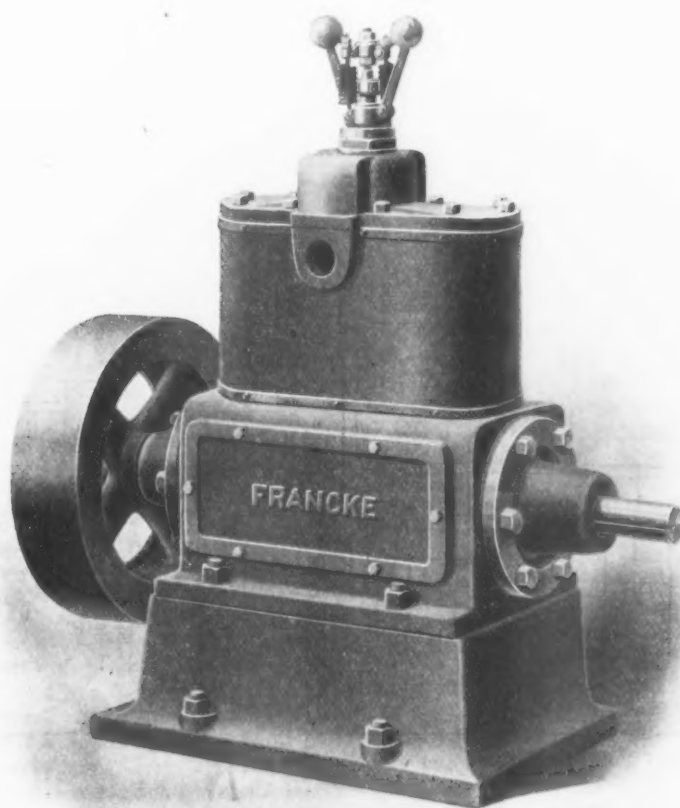
THURSDAY, FEBRUARY 12, 1903

## The Francke Four-Ported Engine.

By means of a single valve and an ingenious combination of ports the advantages of a four-valve engine are obtained in the Francke four-ported steam engine, which has just been placed on the market. As will be observed by the accompanying illustration, the engine is of the inclosed type, is very compact, occupying but small space, and presents a neat appearance. At present the engine is built in sizes ranging only from 5 to 25 horse-power. Larger units are being designed. The engine is of the high speed type, the smaller sizes operating as high as

It has only one valve, so designed as to give a perfect four-valve steam distribution and so simple in construction that the first cost is no higher than any first-class simple engine, while the highest grade of workmanship and material is maintained, and the final cost is materially less, due to reduction in cost of foundation, erection and transportation.

From Fig. 2 it will be noted that the valve is simply a cylinder with a steam port on one side and an exhaust port on the other, turned on the outside to fit a cylindrical bushing containing the ports leading to the cylinders, and on the inside to fit a tube containing



THE FRANCKE FOUR-PORTED ENGINE.

1000 revolutions per minute. It is built either with automatic or with throttling governor for direct connection or belting to dynamos, centrifugal pumps or similar machinery. The novel arrangement of the ports and the single valve are calculated to give to small engines the economy of larger units in use in present practice, and at the same time to adhere to the simplicity of small engines now in use. W. J. Francke of New Brunswick, N. J., is the designer and builder of the engine. Thomas C. Maxfield of 120 Liberty street is sole sales agent.

The engine is of vertical type, containing two cylinders, with the valve placed between them, thus being enabled to serve both cylinders. An advantage claimed for this engine is that it is not four-ported in the sense of having four ports to multiply the clearance space and thus making it necessary to close the exhaust early to get compression at the expense of an economical point of release, but that all its functions—lead, cut off, and even compression and release—are entirely independent of each other.

the live steam ports, and is rotated by a pair of bevel gears from the shaft running constantly in oil. A simple mechanism and one not liable to wear or injury from shock, jar or vibration. The speed at which it may be run with absolute safety from injury of any kind is only limited by the speed which good engineering practice has demonstrated as possible for pistons and connecting rods properly counterbalanced and cushioned by a valve, with which the exhaust port can be closed at a point where the perfect cushioning of the reciprocating parts is attained.

The valve is connected to the governor by means of a substantial spindle which drives the governor and makes the valve and governor practically one integral part, the valve rising and falling with the motion of the governor in a ratio determined by the relative length of the governor arms. The steam port in the valve, one edge of which determines the lead given to the engine, is cut longitudinally with the valve on its inside diameter, so that the up and down motion imparted to the

valve by the governor does not change the position of the valve with relation to the position of the piston, and the lead is maintained constant and may be changed at will without interfering with cut off, release or compression. On the outside diameter of the valve the form of the port changes so that two ports are formed which have a slant corresponding to the slant of the ports cut in the bushing in which the valve rotates, consequently when the valve is raised by the action of the governor the cut off takes place earlier, and when the valve is lowered it takes place later, without in any way changing the lead, release or compression.

The exhaust port in the valve is simply a slot cut longitudinally with the valve, one edge of which opens the port and the other edge closes it. As the valve edge which opens the port does not close it, which it does in case of the reciprocal valve motion, the position of the opening edge may be set in exactly the position which is determined by the indicator to be the best for the speed at which the engine is to run without interfering with lead, cut off or compression, and the closing edge may be set in exactly that position which is determined

ing rods and pistons, shorn of the weight of cross head and piston rod.

The governor is of the centrifugal type, connected directly to the valve spindle itself, both the weight and the valve being driven by bevel gears from main shaft, operating continually in oil; the governor's only function being to raise or lower a light balanced valve, according to the load on the engine. By means of this mechanism very close regulation is obtained with light weights and springs and the simplest form of construction.

For lubrication ring oiling bearings are used for the shaft and an oil bath for the running gear in the crank case. A sight feed lubricator takes care of the pistons and valves. The exhaust steam impinges on the flat surface of the exhaust valve port, forming an oil separator, which spreads the oil over the entire valve surface.

### The Niagara Falls Steel Tower Condemned.

The Niagara Falls steel observation tower is to be torn down before the end of the present year. This de-

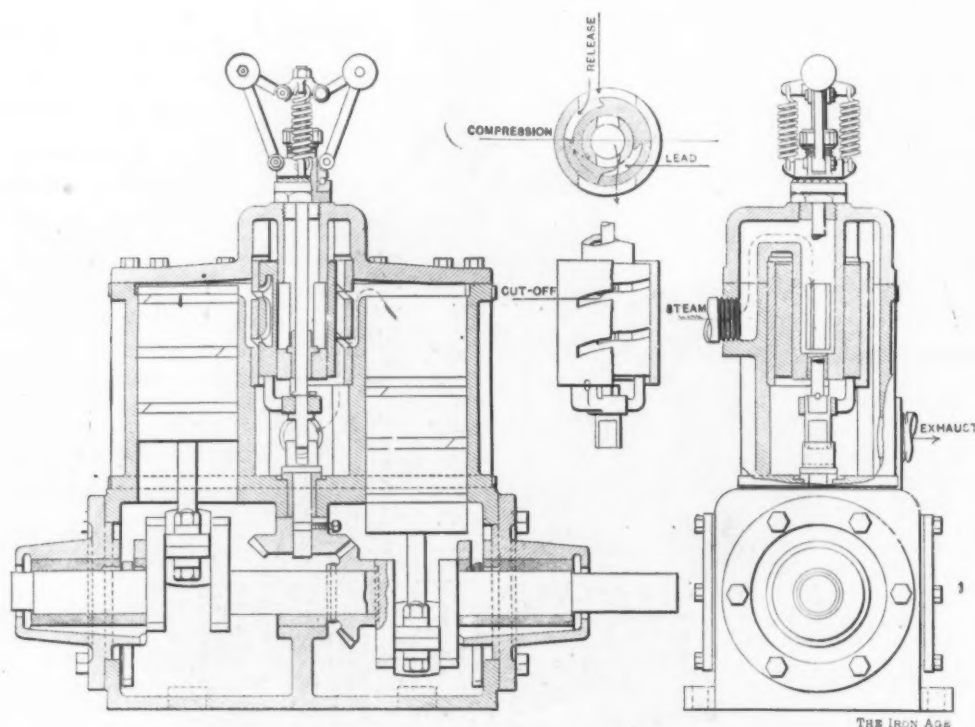


Fig. 2.—Sectional Views.

### THE FRANCKE FOUR-PORTED ENGINE.

by the indicator to be the best to get compression necessary for the economical use of steam and that smooth running and freedom from shock which is so essential to high speeds, without interfering with the lead, cut off or release.

It will be observed, therefore, that this single valve in its simple elementary form gives a four-valve distribution of the steam superior to four-valve reciprocal distribution in that it allows even the release and compression to be set independently of each other. It also allows high speeds to be attained without the shock, jar or vibration incident to the rapid reversals of heavy moving parts in the reciprocating valve motion, and gives an automatic variable cut off without that excessive and wasteful compression which in many high speed engines actually exceeds the initial pressure and when the steam ports open for the lead reverses the current of the steam for an instant, actually driving the steam back into the boiler instead of allowing it to flow freely to the engine at the most important moment. By referring to the cut it will be seen that the reciprocating parts of the conventional type of engine have been almost entirely eliminated, leaving only the two connect-

cision on the part of the controlling company comes as a result of litigation that had a somewhat novel origin. The tower stands on the riverway, opposite Prospect Park, and about 1000 feet back from the American fall. The tower is 331 feet high, and at its base the Tower Hotel is built around it. In winter time the prevailing winds at Niagara Falls are from the southwest, and it has been found that these sweep the spray cloud of the falls against the tower hights, where the icy breath of winter congeals it. At times the tower has been quite coated in some parts by this frozen spray. Adjoining the tower on the north is a museum which has a glass roof. In times of thaw the ice on the tower has fallen and broken the roof of the museum building, doing some little damage. The owners of the museum instituted suit for damages, and a substantial verdict was awarded, while it was further ordered by the court that the company should tear down the tower or abate the nuisance. This the owners of the museum claim the company have failed to do, and an order was obtained in the Supreme Court commanding the tower company to show cause why the tower should not be torn down. The case was referred, and one hearing was held before the referee, when final-



ly the tower company capitulated and agreed that they would remove the tower before the end of the year.

The tower is a familiar object to all who have visited Niagara, and those who have ascended to its top have enjoyed a magnificent view of the surrounding country. From its top it was possible to see the buildings of the Pan-American Exposition and searchlight signals were exchanged with the Electric Tower on the exposition grounds, while the tower shaft of light was hurled toward the lights back of Toronto, Ontario. It has been standing about ten years, but its misfortune is to be located too near the spectacle of which it was designed to afford a remarkable and memorable view.

### The Manufacture of Bolts and Rivets from Drawn Rods.

Our attention having been attracted to the great increase in recent years in the use of heavy wire or drawn rods in the production of bolts and rivets, we have made some inquiry relative to this matter and have received from the manufacturers some very interesting information. This information is reproduced below in the form of extracts from the letters received, the names of the writers being withheld:

"The use of drawn rods is increasing very rapidly in the manufacture of bolts, and we think they are supplanting rolled rods, for the reason that a larger output from the machines can be obtained, owing to the uniformity of diameter, and the waste is reduced to a minimum by reason of the fact that with drawn stock there are comparatively few defective bolts, and the spread between drawn stock and rolled rods is so small that bolt makers are finding it economical to use the drawn stock. This condition will be dependent entirely upon this difference in price, and should the difference decrease, the use of the drawn stock would increase, and *vice versa*."

"According to our observation, during the last ten years, the use of drawn rods has increased, and we think for many kinds of bolts they are supplanting rolled rods and the tendency is all in that direction. However, there are several varieties of small bolts for which the rolled rod is still used and likely to be for some time to come. As the leading sizes of small bolts, such as carriage bolts, are made from sizes of rods that are sold flat when drawn and are subject to extras when rolled it is quite a matter of economy in using the drawn rods. Formerly rolled rods were usually delivered in 12-foot lengths, and as drawn rods are delivered in large coils there is quite a percentage of waste saved. Furthermore, in many machines for upsetting and heading bolts feeding from a coil is necessary."

"It is customary to use drawn stock for making bolts and rivets by the cold process. The reason for using drawn stock is that it is nearer to size than stock which has been rolled, and is free from scale, which is necessary when the cold process is employed. The process of manufacturing bolts and rivets on cold headers is fast supplanting the hot process for these reasons: The daily production is greater and the quality of the work is better. Cold machines are automatic and a group of machines can be operated by one man. The hot machines in almost every case are hand fed, and one operator is required for each machine, and in some cases two operators are needed—one feeds the stock into the machine and the other heats the stock."

"Bolt and rivet makers who use solid dies for heading are using the drawn iron, as it must be very accurate to be thus used. It comes in coils and is straightened in the machine automatically while making the bolt or rivet. I think up to  $\frac{1}{2}$  inch is about as large as it is being used that way, that is, in coiled wire. When larger than that it comes in rods; I think, however, where this class of work is required to be accurate they are using more and more of the drawn rods, but not in coils, as it would be difficult to straighten. I think the machine screw makers are using this drawn iron and are using the machines to put the head on and doing away to some extent with the milling from the rod,

which must be as large as the head to be made. Our machines are doing this and we have sold several for this purpose. Up to the present time, and to some extent now, coupling bolts are made from iron as large as the head is to be and then milled down, making perhaps 50 to 100 bolts per day, while a header now getting into use will take the blanks cut from the drawn rod and will put a standard head on a 1-inch diameter coupling bolt and will turn out from 2000 to 3000 per day, making the bolt almost perfect as it comes from the machines. This, however, is done hot. We are inclined to think that this class of stock will be used more and more."

"The use of drawn rods and wire has increased very greatly in the past few years in bolt making. At the present time nearly two-thirds of our material used here for making bolts is of wire, whereas we once used wholly hot rolled rods."

"We make no rivets larger than 7-16 inch in diameter, and we make these, and always have made them, out of wire which, of course, is drawn from rods."

"In our business we use none but bright drawn stock, and for fine goods this is the only stock to be used. For rolling threads on larger bolts, and where the heads are made hot, we think the rolled stock will not be supplanted at present. When rolling screw threads on blanks it is necessary that the stock should be fairly round in order to bring up a full thread, and it is rather difficult to make hot rolled stock close enough to give a perfect rolled thread, but for larger work, as track-bolt thread rolling, and the rougher class of threads, it is not absolutely necessary that the thread should be full on the entire bolt."

"As to the use of drawn rods, we would say that if this stock was a trifle higher than the rolled rods it would be preferable on account of its being rolled nearer to size and more nearly round. At a less price it would be much more preferable. No doubt the reason of its being used more largely is on account of its price. As long as the price remains so that it is practicable for us to use it, we shall certainly continue to do so."

"To the best of our knowledge drawn rods are not used at all in the manufacture of machine bolts. We believe this class of material is used exclusively by the manufacturers of the lighter class of bolts, as as stove and tire bolts, machine screws, &c., or, in other words, such class of work as can be upset cold. You will readily see that the accuracy of a drawn rod would be of little value where the bolt is forged hot."

"It is our observation that the use of drawn soft steel in coils is increasing in the manufacture of small short bolts. The reason is obvious—namely, the cost of fuel and a man to heat the stock. One man can run two or more machines that make a neater bolt, which we think covers the extreme cost of material and tools."

"It has been our experience that there is greater economy in the use of drawn rods than of rolled rods whenever there is any turning to be done. The drawn rod comes more accurate in size, has a better finish, and is easier on tools."

"Rivets 7-16 inch in diameter and smaller are made from drawn rods or wire and are headed cold;  $\frac{1}{2}$  inch and larger are upset hot, and as far as we know rolled rods are used instead of drawn. We make some  $\frac{1}{2}$  inch cold from wire, but the bulk of  $\frac{1}{2}$ -inch rivets are hot made."

"We are of the belief that drawn rods are being used more and more in the manufacture of bolts."

During the past year the Michigan College of Mines, Houghton, Mich., has added to its plant two needed buildings. One of these is occupied by the departments of civil and mining engineering. In addition to the usual class and lecture rooms, it provides a large drafting room and extensive mining and hydraulic laboratories. The other building is devoted to the needs of the department of chemistry. The year book issued by the college contains interesting information concerning its location, the question of employment of its graduates, &c. It contains also two valuable maps of the copper and iron districts of Michigan.

## The Inauguration of President Humphreys of Stevens Institute.

On February 5 there was inaugurated as president of Stevens Institute of Technology, Hoboken, N. J., Alexander C. Humphreys, who succeeds the late Henry Morton. The ceremonies began on Wednesday evening, February 4, with a reception given by the alumni to President Humphreys in the Carnegie Laboratory. On Thursday afternoon the formal inauguration took place. After prayer by the Rev. Edward Wall, the president of the Board of Trustees, S. Bayard Dod, delivered an address, Prof. Chas. F. Kroeh then speaking on behalf of the faculty; W. F. Zimmermann, on behalf of the alumni; Chas. F. Thwing, president of the Western Reserve University, on behalf of the universities and colleges, and H. S. Pritchett, president of the Massachusetts Institute of Technology, on behalf of the schools of engineering. Andrew Carnegie was also one of the speakers. The oath was administered by Hon. W. J. Magie, Chancellor of the State of New Jersey.

President Humphreys then delivered his inaugural address, which comprised a discussion of the specific needs of the institute as he conceived them and a consideration of his ideals of a technical education.

"In the past," he said, "there has been a tendency in our technical schools to specialize too closely. Graduates of technical schools are sometimes to be heard regretting that they had not first taken a B.A. course. Part of this, no doubt, is a well grounded regret occasioned by a too narrow training, but part of it is the natural inclination we all experience to long for that we do not possess and lightly regard what we have grown familiar with through years of use. No doubt every possible effort should be made to include in the engineer-student's curriculum all that the four years will safely contain of such nontechnical studies as will be best qualified to make the course broad as a whole. But let us be careful that the reaction from the fault of too close specialization does not carry us to the other extreme.

"First our students should be thoroughly and completely trained in the fundamentals required in the practice of their profession. They must be given a working knowledge of the higher mathematics and an accurate knowledge of the fundamental laws of nature; and throughout the course they must be trained to apply in the drawing room, the shops and laboratories, the mathematics, chemistry and physics (especially mechanics and electricity) learned in the lecture and class rooms. There are certain studies which cannot be omitted properly or safely from any engineering course, be it mechanical, civil, mining, electrical, or any other. I should include in this list English, logic, history, modern languages, economics and business methods.

"All this and more must be covered in a course which claims to harmonize theory and practice, for the engineer who is most practical in the shop may be most impractical in business affairs, and here it is to be understood that the engineer must find his success within the limitations of commercial conditions."

On Thursday evening a dinner was given by the alumni to President Humphreys, a very large and distinguished company being present. C. S. Ackerman, president of the Alumni Association, presided, and speeches were made by Bishop Burgess, Col. E. A. Stevens, a son of the founder; S. Bayard Dod, president of the Board of Trustees; Franklin Murphy, Governor of New Jersey; Professor Chittenden, director of the Sheffield Scientific School at Yale; Prof. Edgar Marburg of the University of Pennsylvania; Dr. H. S. Pritchett, president of the Massachusetts Institute of Technology; Tracy Harris, president of the New York Princeton Club; Malcolm S. Greenough, president Cleveland Gas Company; Dr. R. H. Thurston, director Sibley College, Cornell University; Dr. Chas. F. Chandler, Columbia University; Col. H. G. Prout, editor *Railroad Gazette* for the engineering press; Gen. A. W. Greely, for the United States Army; Walton Clark, general superintendent United Gas Improvement Company; Eben E. Olcott,

president American Institute of Mining Engineers, and Capt. W. H. White, vice-president of the Lotos Club.

Two announcements of interest were made. The first was that Col. E. A. Stevens, son of the founder of the institute, had presented to the school the land needed for a dormitory. The other was made by Professor Marburg of the University of Pennsylvania, and was to the effect that the university had conferred upon President Humphreys the honorary degree of Doctor of Science.

The new president spoke on the bearing of technical education on commercial supremacy. The United States, he said, have an advantage over Great Britain in their provisions for technical education and over both England and Germany in the matter of caste distinction. He said in part:

"In the atmosphere of political and social freedom in which we live and work our technical training has its full opportunity. The Englishman enjoys a personal liberty equal at least to that we enjoy. He will not submit to some things we do submit to. But, as it seems to me, we only submit to tyranny so long as we fail to recognize its strength.

"Unfortunately we are too spasmodic in our protests and too easily hoodwinked by our political bosses. In England the governing body is a class in which the traditions of caste are still supreme. Those who rebel do so generally because and only as long as they are refused an entrance within the sacred portals. We have only a weak reflection of these conditions. When this question of commercial supremacy is discussed in England, Germany is generally referred to as being technically ahead of the United States.

"This is no doubt true in certain departments of applied science. Practically I do not believe it is true. Germany has a strong tendency to standardization in education, which is dangerous.

"Here also we are free to pursue such educational lines as the several institutions believe to be for the best. Competition and emulation here work for good, as in all the practical affairs of life.

"It is not enough that the technically trained engineer should be practical in the shop and in the field; he must be practical in his ability to meet business men on their own ground.

"Some engineers fail to secure success because they carry too large a proportion of science; some because they have not enough, and others because they fail to recognize that commercial efficiency must outweigh theoretical efficiency. The training of the engineer must be a harmonious blend of science, practice and commercial judgment. And here, though we can yet do much to increase the percentage of graduates of this quality, we are, so far, ahead of the world."

Alexander Crombie Humphreys came with his parents to America when he was eight years of age. He was born March 30, 1851, in Edinburgh, Scotland, of English and Canadian descent, his father, E. R. Humphreys, being a well-known educator. The family took up its residence in Boston, where the boy attended school and later, receiving an appointment to the United States Naval Academy, successfully passed a special test examination. It was then discovered that he was less than 16 years old, and he was on that account rejected. He, therefore, entered upon a business career, intending at the proper age again to apply at the Naval Academy.

His first experience was in a Boston insurance office. In 1866 he came to New York and remained with the Guarantee & Indemnity Company until 1872. In that year he was appointed secretary of the Bayonne & Greenville Gas Light Company of Bayonne, N. J., with charge of their business interests, and the following year was given full charge as superintendent. Thus began what has been his life work in the line of gas works engineering.

Desirous of adding to his acquirements in practice the training of a technical school, he obtained from the company's directorate permission to absent himself two mornings of each week to attend the lectures at the Stevens Institute of Technology. Entering the school in 1877, he was graduated in 1881, having devoted to his studies only such time as he could spare from business



during the four years. So unusual and so praiseworthy was this that resolutions of commendation and congratulation were adopted by the faculty of the school on June 11, 1881, this probably being an act unprecedented in the history of education.

In the year of his graduation he became chief engineer of the Pintsch Lighting Company, and thereafter erected many gas plants, conducted experimental work and gained knowledge of railroad car equipment. In 1885 he accepted the position of superintendent of construction of the United Gas Improvement Company of Philadelphia, and shortly thereafter was made their general superintendent. Of what he accomplished in this position nothing can better be said than the following, taken from an editorial in the leading organ of the gas interests:

"Mr. Humphreys has built up the present system of management of controlled companies that is the admira-

the third, that of the perfect development of both of these. If such a history were to be confined to a single chapter the caption of that chapter might well be written: Water Gas, Before and After Humphreys."

Previous to the time he resigned as general superintendent of the United Gas Improvement Company, the firm of Humphreys & Glasgow had already been established in England. Mr. Glasgow was also a graduate of Stevens Institute, being one of the class of 1885, and had been with the United Gas Improvement Company from the time of his graduation. In 1894 the firm established an office in New York City; in England the business being the construction of water gas apparatus and in America that of consulting gas engineers. The London office of Humphreys & Glasgow has constructed a large amount of water gas apparatus of the double superheater type with a daily capacity of 130,375,000 cubic feet, while the United Gas Improvement Company, their American colleagues, have constructed apparatus whose daily capacity is 305,025,000 cubic feet. Installations of Humphreys & Glasgow carbureted water gas apparatus have been made in Scotland, Ireland, Denmark, Belgium, Cuba, China, Holland, Germany, West Australia, New South Wales, New Zealand, Japan and Switzerland.

Both Mr. Humphreys and Mr. Glasgow have contributed generously to gas literature. Among Mr. Humphreys' writings is "Water Gas in the United States," a lecture delivered in 1889 before the British Association for the Advancement of Science.

Mr. Humphreys has been the chief executive officer of more than 50 gas and electric light companies, and was for a time president of the Syracuse Gas Company, Syracuse, N. Y.; vice-president of the United Coke & Gas Company, Philadelphia, Pittsburgh and New York, and president City Gas Company of Norfolk, Va. He is now president of the Buffalo Gas Company, Buffalo, N. Y., and president of the Hibbard-Rodman-Ely Safe Company of New York. He is a member of the American Association for the Advancement of Science and of the leading engineering societies, and was president of the American Gas Light Association for the year 1898-1899.

Mr. Humphreys has constantly manifested a deep interest in the Stevens Institute and in its graduates. Since his appointment as member of the Board of Trustees of the institute he has been one of its most influential members. On the Finance Committee of this board he has been of especial service. Upon the death of President Morton the suggestion that Mr. Humphreys should be his successor met an instantaneous response from the trustees, faculty and alumni, and a unanimous sentiment that he was the best man that could be named for the position. At the next meeting of the trustees he was elected, but his business affairs were so pressing that he was unable to accept until he had arranged them so as to enable him to devote to the office of president the time and energy which it required. This he did a month later, when he cabled his acceptance from London.

The Union Club has been formally organized at Pittsburgh, and will occupy quarters on the two top floors of the Frick Building, in that city. The membership of this club is made up of a large number of prominent iron and steel manufacturers in Pittsburgh, and the appointments of the club are said to be among the finest in the country. The new club will be formally inaugurated on Monday, February 16. The following Board of Directors was elected: Reuben Miller, John G. Holmes, William B. Schiller, R. B. Mellon, R. H. Boggs, J. Ramsey Speer, Albert J. Barr, Thomas Patterson, C. A. Painter, George T. Oliver, Joseph R. Woodwell, F. T. F. Lovejoy, W. E. Corey, William Watson Smith and William A. Carr. The following officers were elected: William B. Schiller, president; R. B. Mellon, vice-president; William A. Carr, secretary and treasurer. John G. Holmes, chairman, R. B. Mellon and George T. Oliver constitute the House Committee, while the Membership Committee is composed of Reuben Miller, chairman, Joseph R. Woodwell, F. T. F. Lovejoy, Thomas Patterson and J. Ramsey Speer.



ALEXANDER C. HUMPHREYS.

tion of gas men throughout the world, and which enables the company's small army of employees to be worked as a unit. In 1885 the company had practically no well defined system for managing their various properties, which at that time numbered less than ten. During the next two years, while the new system was being developed, more than 20 works were added to the number. The development of the Humphreys system, which is the chief distinguishing work of the author, had to be undertaken without any guide in the way of previous experience and nothing to copy after."

Ultimately Mr. Humphreys was given charge of the company's department for sales of water gas apparatus, and also the commercial branch of the operating and purchasing department. For nearly ten years he continued his association with this company, his resignation taking effect in August, 1894. As was said at that time, he had "compressed more hard work and energy into those ten years than the average engineer would expend in his generation." A tribute to his work at the time of his resignation said:

"An impartial history of the progress of water gas during the past 20 years must place in the foremost ranks three names. These are Lowe, Granger and Humphreys. To the first belongs the palm of mechanical success; to the second, that of commercial success; to

## The South Russian Iron Industry.\*

BY ARCHIBALD P. HEAD, LONDON.

(Concluded.)

*Iron and Steel Works.*—Having now described the raw materials, some mention may be made of the blast furnaces and steel works, where the finished article is produced. Appendix I gives a list of the 18 chief iron and steel works in the South, together with various particulars as to capital and nationality. From column 6, it will be noticed that most of these works have been built since 1892, and are therefore quite modern. Column 4 shows that Belgian capital largely preponderates. Although the first works in this district (the New Russia Company) were started in 1869 by an Englishman, Mr. Hughes, very little English capital has flowed in the same direction. It is different with Belgian capital. Since the establishment of the first Belgian company, the

in repairing it. If to this be added the cheapness of manual labor, there are sufficient reasons for the avoidance as far as possible of all complicated machinery. Generally speaking, a proper mean course has been followed between too much mechanism on the one hand and too wasteful an expenditure of labor on the other hand. After making due allowance for these conditions, the design and workmanship of some of the most modern blast furnaces and accessory appliances leave little to be desired, and bear comparison with some of the best plants in Europe. The *personnel* are, as a rule, of the nationality of the owners. Thus in works of Belgian or French capital the director and departmental managers are Belgians or Frenchmen respectively. In Russian works, on the other hand, positions of responsibility are largely occupied by Poles. The workmen are in all cases Russian.

It will be seen that of the 18 important works in South Russia enumerated in Appendix I, all make pig

Appendix I.—Iron and Steel Works in Southern Russia.

Name of works. Column 1.	Where. 2	Ref. No. plans. 3	Source of capital. 4	Paid up capital. 5	Date of start. 6	Prod- ucts. 7	No. of blast fur- naces. 8	Production during 1900.		Total. Tons. 11	Average No. of work- men em- ployed. 12
								Pig iron. Tons. 9	Finished iron and steel. Tons. 10		
Hughes, or New Russia Co.....	Hughesofka....	1	English. Belgian and	£900,000	1869	Pig iron and steel.	7	267,820	159,030	426,850	8,319
Dnieprovienné, or S. Russian Co..	Kamenskikole...	2	Russian.	764,440	1889	do.	5	209,980	170,580	380,560	6,339
Briansk Metallurgical Co.....	Ekaterinoslav..	3	Russian. Russo-	1,701,005	1887	do.	5	145,780	107,790	253,570	7,068
Russo-Belge Metallurgical Co....	Volintsevo....	4	Belgian. Russo-	1,579,296	1895	do.	3	150,150	122,255	272,405	2,713
Donetz-Urlevka Metallurgical Co.	Urlevka.....	5	German.	845,883	1895	do.	5	109,510	31,006	140,516	3,630
Drushkova, or Donetz Iron & Steel Co. ....	Drushkova....	6	French.	702,810	1894	do.	3	94,770	79,620	174,390	2,411
Taganrog Metallurgical Co.....	Taganrog.....	7	Belgian. German and	1,189,522	1895	do.	3	79,148	62,356	141,504	3,166
Nicopol-Mariopol Mining & Met- allurgical Co.....	Mariopol.....	8	Russian.	789,684	1896	do.	2	76,770	37,410	114,180	1,769
Pastoukof, or Soulniskie Works...	Souline.....	9	Private.	.....	1860	do.	3	38,738	25,284	64,022	3,004
Russian "Providence" Works...	Mariopol.....	10	Belgian.	1,784,189	1898	do.	3	72,335	47,135	119,470	1,972
Makievskala Works.....	Makievskie....	11	.....	.....	.....	do.	2	47,080	16,664	63,744	1,259
Gdantsevski, or Krivoy Rog Iron Mining Co.....	Krivoy Rog....	12	French.	.....	1892	Pig iron.	3	52,038	.....	52,038	330
Olkovaia Iron Smelting Co.....	Ouspensk.....	13	Belgian.	297,365	1896	do.	2	76,277	.....	76,277	450
Krematorskova Metallurgical Works .....	.....	14	.....	.....	.....	do.	2	15,059	.....	15,059	298
Almaznala Colliery Co.....	Almaznala....	15	Belgian.	.....	1900	do.	2	14,688	.....	14,688	176
Kertch Metallurgical Works.....	Kertch.....	16	.....	.....	.....	do.	2	25,059	.....	25,059	2,274
Verkhné Dnieprovienné Works...	Ekaterinoslav..	17	Belgian.	515,432	....	do.	1	.....	.....	.....	.....
Bielala Blast Furnace Co.....	Bielala.....	18	Belgian.	396,486	New.	do.	2	.....	.....	.....	.....
Totals..55								1,475,202*	859,130*	2,334,332	....

\* Later corresponding figures are as follows: Pig Iron—1901, 1,482,000 tons; 1902 (rate of), 1,457,000 tons. Iron and steel—1901, 984,000 tons; 1902 (rate of), 894,000 tons.

Dnieprovienné, or South Russian Company (associated with Messrs. Cockerill of Seraing, Belgium), there has been a constant influx of Belgian capital. Out of the most important works enumerated at least eight are partially or entirely Belgian capital, while out of the total number of 55 blast furnaces 21 are Belgian.

The author personally visited five of these works—viz., Briansk, Donetz-Urlevka, Gdantsevski, Almaznala and Bielala—and was much struck by the good, substantial and well constructed nature of the work. Generally speaking, the structural portions of the works have been built in Russia, and the machinery in Belgium, Germany or France, or to a small extent in England and America.

There is, perhaps, an absence of labor saving appliances in the blast furnaces, notably in the handling of materials between the stock piles and the furnace top. But it must be remembered that Russia is different from Western Europe and America, in the scarcity of skilled mechanics for the maintenance of machinery. Mechanical instinct is not a conspicuous quality among Russians, and the care and foresight exercised by those in charge of machinery are too often regulated solely by the amount of supervision and discipline to which they are subjected. Consequently there is not only a great liability for machinery to go wrong, but great difficulty

in repairing it. If to this be added the cheapness of manual labor, there are sufficient reasons for the avoidance as far as possible of all complicated machinery. Generally speaking, a proper mean course has been followed between too much mechanism on the one hand and too wasteful an expenditure of labor on the other hand. After making due allowance for these conditions, the design and workmanship of some of the most modern blast furnaces and accessory appliances leave little to be desired, and bear comparison with some of the best plants in Europe. The *personnel* are, as a rule, of the nationality of the owners. Thus in works of Belgian or French capital the director and departmental managers are Belgians or Frenchmen respectively. In Russian works, on the other hand, positions of responsibility are largely occupied by Poles. The workmen are in all cases Russian.

It will be seen that of the 18 important works in South Russia enumerated in Appendix I, all make pig

iron, in a total of 55 blast furnaces, and 11 are steel makers in addition. The works are not concentrated in manufacturing centers, but scattered along the Ekaterine Railway. The whole country is what is known as steppes—viz., extensive undulating plains, entirely treeless, except by the edges of streams and rivers. Every eminence is crowned by a tumulus, said to have been erected in olden times, either to repel the Tartar invasions or as a burial place for chiefs. The scattered nature of the works and the comparative scantiness of population, as well as the want of enterprise of private builders, make it necessary for each company, whether mining or metallurgical, to erect colonies for their work people, which generally consist of comfortable houses, varying in accommodation from the eight-roomed house, containing four unmarried men per room, to the sumptuous mansion of the director. The rainfall is small, being about 11 inches per annum, due to the treelessness of the land. This necessitates elaborate and expensive arrangements for water supply at most works. At one blast furnace plant visited by the author an artificial lake has been made, 97 acres in area, holding 143,000,000 gallons of water, and situated 200 feet below the blast furnaces, to which water is pumped in two stages by electrically driven pumps.

*Blast Furnaces.*—The typical modern blast furnace in the Donetz district, such as would be suitable for the

\* From a paper read before the Society of Arts, London.



production of Bessemer or foundry pig iron, or, by the addition of manganese ore, of spiegeleisen, containing 20 per cent., and ferromanganese, containing 80 per cent., of manganese, has a productive capacity alternatively of:

Pig iron.....	150 tons per 24 hours.
Spiegeleisen.....	100 " " 24 "
Ferromanganese.....	70 " " 24 "

The cost of manufacture and profits derived from these three varieties of pig iron are given in detail below:

Cost of Foundry Pig Iron.		Per ton of pig iron.	
		s.	d.
Iron ore, 12-3 tons.....		22	4
Coke, 0.95 ton.....		21	4
Flux, ½ ton.....		1	4
Labor, general expenses, &c.....		10	0
Total.....		55	0

Taking the market value at the present exceptionally low figure of 63 shillings at the time of the author's visit, there is a profit of 8 shillings per ton. In 1899 the market value was 106 shillings.

Cost of Spiegeleisen.		Per ton of spiegeleisen.	
		s.	d.
Iron ore, 1½ tons.....		19	0
Manganese ore, 0.6 ton.....		23	9
Coke, 1.4 tons.....		31	6
Flux, 1 ton.....		2	8
Labor, general expenses, &c.....		17	2
Total.....		94	1

Taking the market value of spiegeleisen at £5 5s. 6d., this yields a profit of 31 shillings 5 pence per ton.

Cost of Ferromanganese.		Per ton of ferromanganese.	
		£	s. d.
Iron ore, ½ ton.....		0	1 11
Manganese ore, 2½ tons.....		4	19 0
Coke, 2½ tons.....		2	16 2
Flux, 1 ton.....		0	2 8
Labor, general expenses, &c.....		0	19 10
Total.....		8	19 7

Taking the market value of ferromanganese at the exceptionally low figure of £16 10s., this yields a profit of £7 10s. 5d. per ton.

**Import Duties.**—There is an import duty into Russia on ordinary pig iron by way of Black Sea ports of £2 19s. 5d. per ton, which is sufficient to keep out foreign competition. An excise duty of 2 shillings per ton of Russian made pig iron was abolished by the Government in 1901, in order to afford some relief to the harassed trade. On account of the heavy import duties pig iron has been imported in but small and decreasing quantities, as follows: 1900, 51,000 tons; 1901, 29,700 tons; 1902, at the rate of 14,520 tons.

The import duty on ferromanganese and spiegeleisen is £4 19s. per ton, which is sufficient to keep out English made spiegeleisen, but not sufficient to keep out English made ferromanganese, which latter can be sold in South Russia at about £2 per ton below market price, and which is sent regularly from England by way of Black Sea ports at the rate of about £250 tons per annum. At the present time spiegeleisen and ferromanganese are being made in Russia at five of the works enumerated in Appendix I. The import duties on finished steel products are as follows: Steel ingots and plates, £5 18s. per ton; merchant iron, £5 18s. per ton; steel sheets, £8 9s. to £9 18s. per ton.

**Government Control.**—The Government exercises a very real and somewhat paternal control over the mining companies for the protection of the work people, employing an army of officials for the purpose. All companies are obliged to supply a Government mining engineer, and are subject to periodical visits by Government inspectors. The companies are obliged to provide proper accommodation for the operatives in the way of houses, hospitals, churches, &c., and the slightest accident resulting in injury to any workman is the subject of Government inquiry. The employers appear to live in dread of accidents, on account of the troublesome investigations which invariably follow.

**Steel Works.**—The 11 steel works in South Russia are, as a rule, well equipped with modern machinery. Both the open hearth and Bessemer processes are used for

conversion of pig iron into steel. The finished product may be classified as follows:

	Per cent of total steel production.
Railway materials (rails, fish plates, tires and axles).....	47.5
Merchant bars, sheets, columns.....	37.2
Miscellaneous.....	15.3
Total.....	100.0

The present market prices of finished steel products are: Rails, £8 5s. per ton; rolled joists, £5 15s. 6d. per ton; merchant iron, £8 5s.

**Railways.**—The abnormally large proportion of railway materials indicates that railway construction absorbs about half the steel production of the South. This is due to the fact that Russia has been, and is still, going through a period of great railway construction, entered upon with a view of developing the resources of her empire, both European and Asiatic. The new mileage opened within the last few years is as follows:

Railway Construction.		Existing railway	
Year.	Opened for traffic.	Miles.	doubled.
	Miles.	Miles.	Miles.
1898.....	1,897	205	
1899.....	3,296	160	
1900 (first half).....	543	17	

About two-thirds of the Russian railways are owned by Government and one-third by private companies, as follows:

Ownership of Railways.		Government railways.	Private companies.	Total.
		Miles.	Miles.	Miles.
In full operation.....	21,697	10,118	31,815	
In partial operation.....	1,014	585	1,599	
Under construction.....	1,110	3,394	4,504	
Authorized to be built.....	469	1,557	2,026	
Totals.....	24,290	15,654	39,944	

Since 1899 the Russian Government has gradually bought up private railways, and amalgamated into a few large companies those not so bought up. It has thus got rid of large liabilities for guaranteed dividends, and has turned an annual loss into a profit. Railway concessions are no longer granted on the easy terms which were once obtained.

Owing to the relatively small amount of private enterprise and capital in Russia, the general demand for finished steel and iron products for industrial purposes is small, while exports to foreign countries are negligible. The iron and steel industries, therefore, look to the Government as their chief customer, and are dependent principally on orders from it for railway materials. About 40 per cent. of all the free pig iron (*i. e.*, not sold as finished steel) made in the South is purchased by the Government. The prospects of these industries thus depend largely on the programme of railway construction being carried out by the Government at the time, which in turn depends on the funds at its disposal for this purpose. The Government, on the other hand, has fostered and to a great extent brought into existence the Southern iron industries by heavy import duties and by distribution of orders. The general demand for steel from the public has not grown apace with the productive capacity of the works, and, indeed, increases very slowly, while the Government requirements have, until 1900, increased very rapidly. The result is that the South is practically dependent on one large customer—viz., the Government.

**Trade Depression.**—As is well known, Russia has been for the last two or three years passing through a grave commercial crisis which seriously affects all industries, and notably the Southern iron industries.

After an unusually active year of railway construction in 1899, the Government, presumably on account of insufficient means, suddenly stopped or almost stopped further expenditure thereon in 1900, while orders for railway building materials underwent a great and sudden decrease, with results which were most keenly felt by the Southern iron industry.

The price of foundry pig iron, which in 1899 had been about £5 5s. per ton, rapidly declined until March

and April, 1901, when it touched £3 per ton, since which it has recovered somewhat. The cause of the scarcity of money in the State coffers has been variously assigned to the stringency of the money market caused by the Transvaal war, the too rapid industrial development in Russia, the Chinese troubles, the German financial panic and the recurrent bad harvests in Russia. Probably each one has contributed to the result, but whatever the cause, it seems clear that if sufficient capital flowed into Russia, by means of a foreign loan or otherwise, to enable the railway programme to be recommenced, a large proportion of the money to spent would flow to the Southern iron industry, and would bring to it a renewal of prosperity which would probably last for some years. At present the revival awaits this influx of capital.

From the most accurate information which the author was able to obtain, the following railways have actually been decided upon by the Government, some or all of which will probably be commenced as soon as the financial situation admits of it.

1. Trans-Siberian Railway, completion.
2. Trans-Siberian Railway, completion of relaying with heavier rails.
3. St. Petersburg to Odessa, direct line.
4. St. Petersburg to Viatka.
5. Moscow to Kazan and Kishtimsk.
6. Orenburg to Tashkend.
7. Odessa to Donetsk coal field.
8. Krivoy Rog ore region to Donetsk coal field.
9. Kief to Kovel.

The total estimated cost of above is about £66,000,000.

The crisis in the coal industry is, perhaps, more acute even than in the iron and steel industries, owing to the added effects of overproduction, and consequent increase of stocks.

Owing to the extensive and almost reckless manner in which Belgian capital has been invested in South Russia, the former country has suffered very heavily from the present crisis. Belgium being a small but rich country, with much greater wealth than can be profitably invested at home, has been a large investor in the South of Russia, which, thanks to the high profits made in former years, seems to have exercised a peculiar fascination for its financiers. It must be remembered, however, that much so-called Belgian capital is really French capital, companies being formed therewith in Brussels owing to the somewhat laxer regulations there existent.

Recent quotations from the Brussels Bourse of Russian securities show that steel works debentures average 73 per cent. of par value, and ordinary shares 30 per cent.

The Russian Government is using every endeavor to introduce foreign capital, and especially English and American, and for this purpose makes copious publications in the English language, dealing with the industrial possibilities of Russia.

The present situation, however, contains some encouraging features. Signs are not wanting that public confidence is being restored in Russia, and prices have already shown a tendency to increase and inquiries to become more numerous. Again, the trying period through which the iron industries are passing doubtless has done and will do much to teach the salutary lesson of economy of management, to which too little attention was paid during the preceding prosperous years. Cost of production in general, and in particular that item with the comprehensive title of "General Expenses," has, under the stress of stern necessity, undergone sensible reduction. Superfluous officials have been discharged and numerous leaks stopped up, with the result that in one case that came under the author's notice a company which during the prosperous times found it difficult profitably to sell steel for £10 per ton, make it pay, after the introduction of such economies, with the price reduced to £8 per ton.

In Russia, where money is scarcer than in Western Europe, it is doubly desirable to have ample working capital for operating iron and steel works. Long credit is the rule, three months being usually expected by cus-

tomers. If three months' bills are received from debtors and discounted at banks a high rate of discount is charged, and it is, therefore, economical to have sufficient working capital to render such discounting unnecessary. This can be set off to some extent by demanding three months' credit from those who supply the raw materials, but the same reasons make this undesirable. On the other hand, ready cash must always be found for wages and railway charges. The interest paid by banks on deposits is usually  $3\frac{1}{2}$  per cent.

*Labor.*—The native laborers in Russia are cheap, patient and obedient, but they are less energetic and efficient than the more highly paid workmen of Western Europe, which tends to counterbalance the advantage of cheapness. They are also lacking in mechanical instinct and initiative and are somewhat servile, as might be expected from a people liberated from serfdom only 40 years ago. Education is, from a Western point of view, somewhat primitive, and the village commune system, involving a peasant ownership of land, by discouraging a peasant from moving about, tends to narrow his ideas and prevent his mental development.

Russian villages are sometimes of great size, one called Tomatovka, passed through by the author, being no less than 10 miles long, and rather in the nature of a town than a village. The houses are, however, spread out evenly, each with its own garden, and not, as would be the case with a similar town in England, crowded together in the center. Each peasant owns, in addition to the garden attached to his house, a share of the common land in the village, the amount per peasant varying from 8 to 27 acres. If he leaves the village and goes to another he resigns his share of the land, while he is unlikely to be admitted to equal privileges in his new home. He must, therefore, either stay where he is, or emigrate, for which an official permit is required, or go to the large towns, where he is handicapped by his lack of education. To add to his troubles, while the amount of land available has not increased, the number of peasants is increasing, so that each man's share has become smaller. The village commune system, which was established to insure the peasant against want, is not by any means universally successful in its working.

In former years the Russian peasant was very drunken, and often, after he had spent all his money, would pledge his future crops or labor to the publican. After failing to remove these abuses by numerous laws, the Government took the bold step of taking over the manufacture and sale of spirits, which was accomplished between 1895 and 1898. The result was that the consumption of spirits per head, which in 1867 was 1.66 gallons, fell in 1897, even before the reform was completed, to 0.93 gallon per head. The corresponding figures for the United Kingdom and United States are 1.03 and 1.01 respectively.

The greatest benefit that could befall the Russian iron industry would be the growing up of a steady public demand for iron and steel, which would make the Government orders of secondary importance. Russia would then be able to make the most of her marvelous natural mineral resources and cheap labor, and the iron industry would become a great source of national wealth to a country which is at present too purely agricultural. So long as the importance of agriculture is relatively overwhelming, so long will the recurrent bad harvests mean grave financial and political embarrassment to the Government. The growth of a public demand for iron and steel is, however, a thing of the future. It must be remembered that the old time division of Russian society into two classes—i. e., nobles and peasants—still obtains to some extent, 80 per cent. of the population being peasants, while the middle classes, which in the Western nations comprise the enterprise and virility of the community, are in Russia only 9 per cent. of the total, and are largely confined to the cities.

For centuries Russia has looked abroad for and has welcomed to her shores men of energy and brains, to initiate and carry on the enterprises and manufactures which in other countries would spring up naturally from within. This is testified to by the fact that so many



Russians in leading positions have non-Russian names.

**Railway Rates.**—The system of railway rates in Russia is worthy of imitation by the rest of Europe; it is a modified Hungarian zone system, and was introduced about 1895. It is based on the logical principle, widely recognized in commerce, of giving a reduction for quantity. Both for goods and passengers the mileage rate varies inversely with the total distance. Thus to convey iron ore from the Krivoy Rog mines to the iron works in the Donetz district, a distance of 260 miles, costs only 0.23 penny per ton mile, while for short distances, up to 66 miles, the rate is 0.316 penny per ton mile. In the passenger tariff the rates are still made in favor of the long journey, with the result that, since the new system was introduced, the passenger traffic has increased largely.

**Conclusion.**—In conclusion, the South Russian iron industry cannot, in the opinion of the author, be considered at present as other than an artificial one, depending as it does on the high tariffs to keep out foreign competition, and to a large extent on Government activity in railway construction for the demand. Both are unnatural conditions; and though a protective policy is often of long duration, and, as in the United States, not inconsistent with great national prosperity, the single customer condition, involving a demand varying with the resources of the Government for the time being, is somewhat hazardous.

Until the check received in 1900, the growth of Russian manufacturing industries—i. e., other than agriculture—was remarkable, the turnover increasing from £54,000,000 in 1887 to £181,000,000 in 1897. The author refrains from dogmatizing as to whether this is because of or in spite of protection.

Although the South Russian district is now very much depressed, it has had periods of great prosperity, and will doubtless have them again. The market for its iron and steel products is, however, likely to be purely internal for some time to come, and in the author's opinion the time when Russia will compete with other countries for the neutral markets of the world is as yet far distant.

#### Wolcott Iron Ore Mines to Be Reopened.

A. B. Thasher of Wolcott, N. Y., is at the head of a movement to open what are believed to be vast iron ore beds in the vicinity of that village. It is stated that all of the desired territory has been leased, and that operations will soon begin in the development of the mines. The ore comes to the surface about 1 mile north of the village. The first work will be to sink a core drill down to and through the ore. The core drill will be sunk about ½ mile north of Wolcott, along the Rome, Watertown & Ogdensburg Railroad tracks. If the ore shows as great thickness as is expected the first shaft will be sunk at that point, otherwise other points will be tried until a satisfactory spot is found to sink the main shaft.

About 40 years ago the ore was first discovered and furnaces were built at Wolcott, but the ore was found to contain salt to such an extent that by the methods then employed nothing could be done with it, although it contained 50 per cent. of metallic iron. By modern methods the salt is no obstacle. The furnaces were abandoned, and now only huge piles of cinders mark the place where they once stood.

About a year ago a well was drilled in Wolcott to secure water for furnishing an ice plant for one of the cold storage warehouses in that place. It was sunk to a depth of more than 200 feet. Not enough water was found to supply the needs of the warehouse, but at this point a vein of ore 6 feet thick was found at a depth of about 180 feet.

**W. J. Carlin Company.**—The W. J. Carlin Company of Pittsburgh have bought the plant of the Columbia Steel Foundry Company, in that city, with entire equipment and lease of ground. The foundry has modern equipment, good railroad facilities and a daily capacity of 20 tons, being ready for immediate operation. The W. J. Carlin Company offer this plant for sale or lease.

#### The Vulcan Foundry & Machine Company.

In September, 1899, the Vulcan Foundry & Machine Company were organized at New Castle, Pa., and acquired the plant of the Vulcan Iron Works at that place. The original plant taken over comprised foundry, machine shop, pattern shop, a small power plant and an office building. The output of the plant was mainly castings and amounted to about 100 tons a month. Immediately upon securing possession of the works the Vulcan Foundry & Machine Company made extensive improvements and additions and the entire plant has practically been rebuilt and on a very much larger scale. The first addition made was a power plant contained in a new building, 50 x 100 feet, of brick construction throughout. It is equipped with Cahall water tube boilers of 300 horse-power capacity, feed pumps and feed water heater. An Armington & Sims engine, 20 x 28 inches, driving a Keystone 150 kw. generator, supplies electric power. An auxiliary generator of 75 kw. furnishes electric light. The original foundry was 60 x 120 feet, of steel and brick construction throughout, but it has since been enlarged and modern equipment has been added. A new cupola platform of steel construction has been built and also a yard crane of 15 tons capacity, which is used for loading and unloading materials, breaking skulls and charging the cupola. A new Sturtevant blower has recently been installed in the foundry which furnishes blast for the cupola and is operated by a 70 horse-power Keystone motor. A new 40-ton Morgan electric traveling crane commands the entire foundry. The machine shop, which is 100 x 120 feet and of steel construction, with brick walls, is equipped with a 30-ton Morgan electric traveling crane and eight motors of various capacities, the line shafting being divided and each section driven by its own motor. The machine shop is equipped with four planers, one boring mill, six lathes, five drill presses and smaller tools. There is also included in the equipment of the machine shop a 72-inch lathe of special construction. The plant also contains a 30 x 40 foot blacksmith shop built by the Vulcan Foundry & Machine Company, and a pattern shop, 50 x 75 feet, equipped with modern wood working tools.

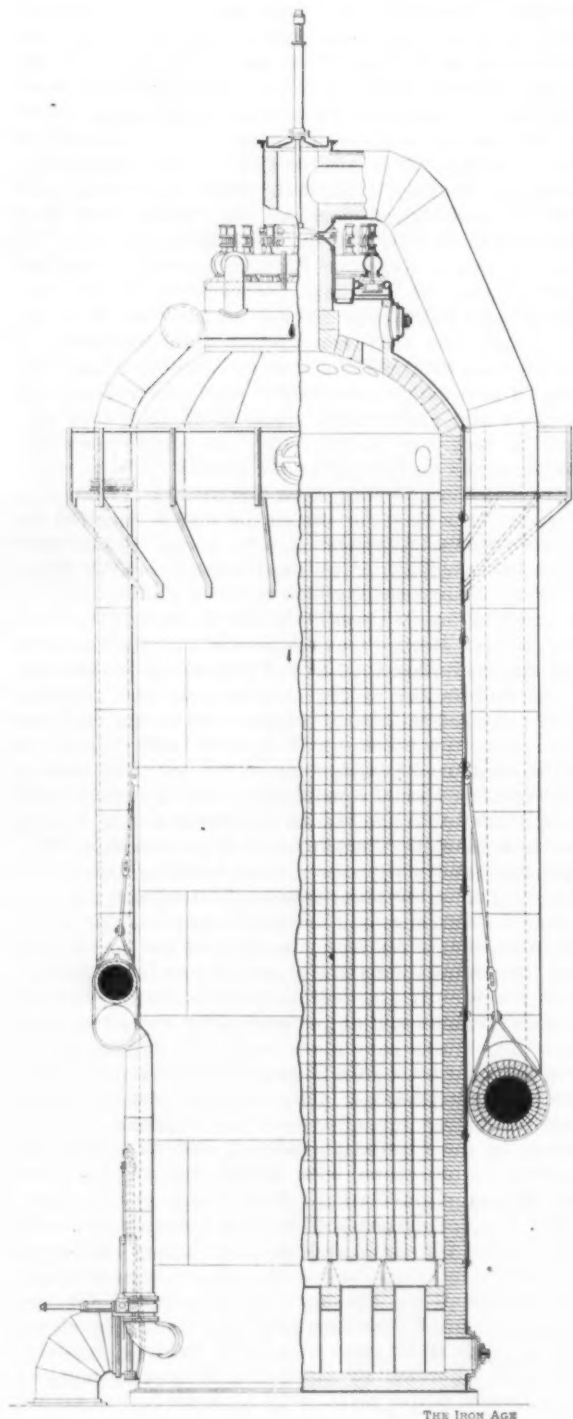
\* The output of the plant is heavy rolling mill machinery, such as blooming and bar mills, sheet and tin mills, skelp mills, shears for heavy work, post and locomotive cranes, the company making a specialty of the manufacture of cranes. Among recent shipments made were an 18-inch continuous mill and a large skelp mill of modern design. The works have about ready for shipment complete equipment for a steel hoop plant consisting of mills, tables and manipulators. They are now building three cranes of 20 tons capacity, each for shipment to steel concerns in the Pittsburgh district, and have recently finished a 15-ton crane with 40-foot jib for the New Castle Works of the National Steel Company. The center post or pillar cranes built by this company are especially adapted for use in railroad and factory yards and docks where traveling cranes are too costly or else are impracticable. They are particularly adapted for use in steel works and foundries as skull or scrap breakers. They are made in all sizes from 10 to 100 tons capacity, and can be operated by electricity or steam, supplied from a central power plant or by separate boilers placed on the machines. These cranes are equipped with cut steel gears throughout, insuring smooth operation and maximum power. The 15-ton crane referred to above as having been erected at the New Castle Works of the National Steel Company is electrically driven and is used as a skull breaker and serves the ingot extractor.

The location of the plant of the Vulcan Foundry & Machine Company is an admirable one as regards receiving and shipping facilities, the plant having switch connection with the Baltimore & Ohio, Pittsburgh & Lake Erie, Pennsylvania and Buffalo, Rochester and Pittsburgh systems of railroads. The officials of the concern are: J. S. Kaufmann, president, and N. O. Strassberger, secretary and treasurer. Branch offices are maintained at 208 Wood street, Pittsburgh, with C. W. Lytle in charge.

## The Moore Hot Blast Stove.

The requirements of a good hot blast stove are as follows:

1. Complete combustion of the heating gas.
2. Distribution of the resulting heat.
3. Heating surface, or capacity, as usually considered.

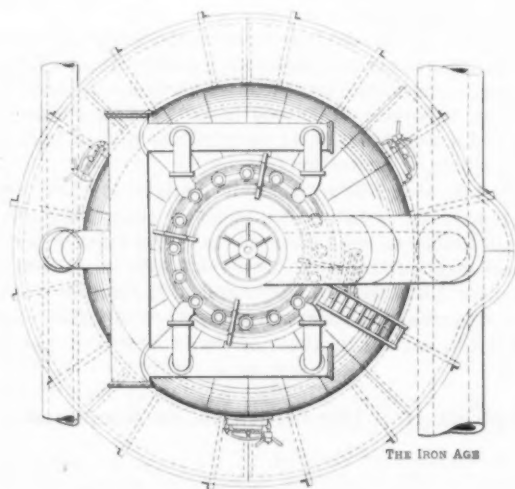


*Longitudinal Section and Elevation.*

capacity, with gas of a known quality, in certain mixtures with varying quantities of air, the cold blast and gas at stated pressures, and the periods of time required to heat known amounts of checker work. Neither is it known to a certainty just how little variation can be had by the use of two, three or four stoves in the temperature of the blast that is delivered to the blast furnace, but an attempt will be made to obtain something authoritative along the lines indicated as soon as the stoves herewith illustrated are put into operation. The Moore hot blast stove has been invented and patented by Enos L. Moore, Monon Building, Chicago.

It is claimed by Mr. Moore that with the exception of minor changes in various forms of checker brick, and the reduction of the number of passes through which the gas and blast had to travel (from six to four and two passes), there has been nothing of consequence achieved in hot blast stoves since the introduction of the Whitwell fire brick stove into this country from England some 25 or 30 years ago. He makes the following statement:

There are now two patented features which play more or less important parts in all stove fittings—viz., the Berg removable bronze hot blast valve seat and the Spearman gas burner, but the patents on the last have about expired.



*Top Elevation.*



*Section through Checkers.*

### THE MOORE HOT BLAST STOVE.

4. Stability of the masonry.
5. Accessibility for cleaning and repairs.
6. Efficient fittings.

And, finally, the parts of the stove shell, masonry and fittings must be designed for long continuous service with little or no attention. All these features are essential, and the order of their enumeration is immaterial.

There is little or no datum of record as yet on what temperatures can be sustained in stoves of a given

### The Spearman Burner.

Any furnaceman knows the importance of absolutely disassociating the blast under pressure in the stove from the gas under a lower pressure in the gas main or branch, and this one feature constituted the whole value of the Spearman burner. All of the burners used prior to the introduction of the Spearman burner were so constructed that if, or when, a leak occurred from the hot blast in the stove, around the burner opening, this heated blast found its way under considerable pressure



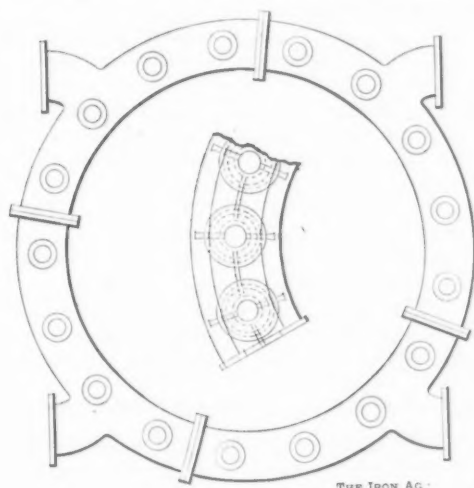
into the gas which the burner held, and the resulting blow pipe heat was such that nothing could withstand its action.

The Spearman burner was designed as a thing apart from the stove, so that when the gas was off it stood away by itself, and the burner opening had to be closed by running a lid, or cover, into place and bolting it securely. This arrangement, though more or less laborious, was such that if either the blast in the stove or the gas in the burner found a leak, the waste of blast or gas was out into the open air, where, beyond the insignificant loss of pressure, there was no damage done. While this burner was a decided improvement over anything that had previously appeared in reducing the cost for repairs, there can be little doubt that because of its adoption, more than because of any other feature of hot blast practice, the development of the hot blast stove was arrested at that point and has re-

pulped, which seems to have found acceptance in almost all other fields of mechanical endeavor.

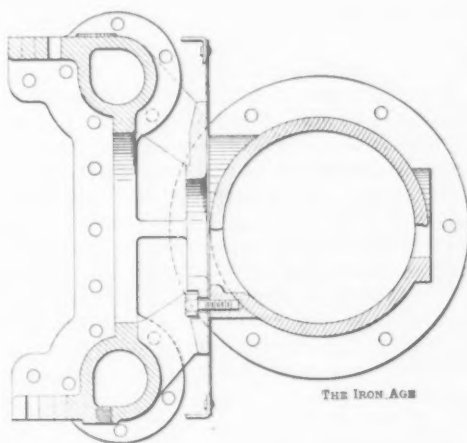
#### The Moore Burner, Operated from a Pulpit.

In this day of automatic apparatus of every description it seems crude and primitive to see the series of operations that a stove tender must go through as he moves from one point to another around the bottoms of his stoves, first shutting off the gas, then bringing the intake cover to its place and bolting it, then closing the air openings, and then the chimney valve, after which he opens the cold blast valve and then goes around on the other side again and opens the hot blast valve. After going through this manual of valves at irregular speeds on one stove, he goes over to the cold stove and reverses these same operations, putting it on gas. The Moore stove does away with all this useless hand and foot work, and both changes, from gas to blast and *vice versa*, are produced from a single pulpit, at each stove,



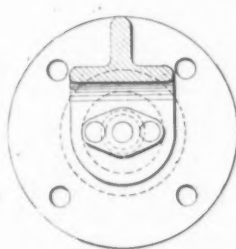
THE IRON AGE

Gas Burner, Circle Pipe and Section of Multiple Burner.

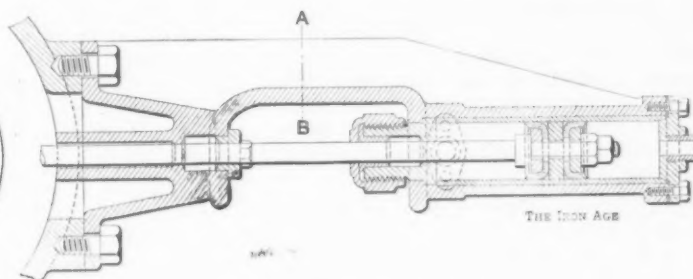


THE IRON AGE

Section of Multiple Burner and Circle Pipe.



Section through A B.



THE IRON AGE

Gas Burner Operating Cylinder.

#### THE MOORE HOT BLAST STOVE.

mained in an unscientific state ever since. It had no means of adjustment to regulate the varying proportions of gas and air, unless it be thought by its friends that to move the burner nozzle away from the stove, thus reducing the gas opening and enlarging the air opening at the same time, constitutes an adjustment; and there was no provision for compelling a perfect mixture of the gas and air, so that it is at present the common practice to make an extra opening or two to provide enough air to complete the combustion. This may mix properly in a large vertical combustion chamber and it may not, the chances being favorable to chimneys of hot carbonic acid gas and cold air.

Perhaps the worst feature of this burner, and the one which is accountable more than any other for delaying the development of the hot blast stove, was the fact that at least three distinct operations had to be performed every time that gas was put on a stove or taken off. This certainly is responsible for the fact that the burner has never found its way up off the ground into the regions of good clean gas, and also for the total lack of that mechanical provision for operating any one piece of mechanism from a single stand, or

by the use of small hydraulic cylinders, the waste water being used over again to cool the valves and their seats. A low pressure is all that is required, and this must be had on any kind of a stove for the last named purpose.

It will be noticed that the multiple burner retains all that there was of real value in the Spearman burner, in that the blast and gas are separated by an intervening space, which is open to the atmosphere, but at the same time, by the use of 17 small openings instead of one large one, the chances for a complete mixture of the air and gas are much improved. The burner will give an almost continuous ring of flame at a point and in a form that will be the most effective, and there will be no possibility of one opening burning and others remaining cold. At the instant that any one of these small jets becomes ignited the flame travels around the entire circle exactly as it would on an old fashioned gas chandelier, and by the use of this burner it is possible to take gas at such an elevation that, notwithstanding the use of fine ores, this gas must be clean. It is possible to distribute it in an ideal fashion, to mix it thoroughly and beyond peradventure, in varying proportions, and these proportions are regulated automatically, according

to the quality of the gas, the air supply being constant and the gas throttled according to whether it is rich or lean. This gas burner is also important in that it supplies any determined amount of gas and is controlled from a pulpit which can be located at any convenient point, above or below, the ground level being thought best. It will be noted also that there are no opportunities for the accumulation of dust in any of the connections, except at such points as are easy of access by means of cleaning doors.

#### The Top Location of the Burner.

Particular attention is directed to the location of the burner on another account, which is of great economical importance. It is an axiom in physics that heated air or gas rises, and that cold air or gas descends. By the application of this principle to the hot blast stove, in the location of the burner on top and the combustion chamber in the dome of a stove, a condition is secured which, aside from the mechanical distribution of the burning gas all over the top of the checkers, like a law of nature, must act to equalize the amount of heated gas passing through the checkers on its way to the chimney.

The chimney draft is a constant force acting to pull the gas down through the checkers, and the heat produced by the gas, or started in the checkers, is a varying influence, so that as one flue, or one lot of flues, becomes heated there is a tendency to resist the downward effect of the draft, and consequently the equilibrium is disturbed at that point in favor of any cooler passages there may be which have the downward draft and less resistance because of the lower temperature. This twofold natural influence is combined with a mechanical distribution which should guarantee an even absorption of heat by the entire checker section of the stove, this in turn acting in the most satisfactory way to prolong the life of the masonry.

Another feature of this arrangement which has largely to do with first cost is that because of the location of the combustion chamber immediately under the dome and all over the top of the checkers, the designer is able to get the greatest possible amount of heating surface into the least possible space.

In the particular case from which our illustration is taken the amount of heating surface per foot of height through the checkers is exactly 41 per cent. more than can be had from any of the other stoves of equal diameter upon the market. In other words, 1 foot of height through this checker work is equal to 530 square feet of heating surface, as against 375 square feet in two well-known types of two-pass stoves, where, because of the fact that the gas is burned at the bottom, it is necessary to devote a large part of the stove section to an ascending combustion chamber, which may be located in the center or at one side, but must extend from the bottom to the top. It will be readily understood from this that a saving in first cost must result from the use of this stove, because, no matter what the unit of heating surface may be, it will take less masonry and less shell to provide for it.

Assuming that there should be 1 square foot of heating surface to 1 cubic foot of free air to be heated, a single stove of this style can be made to accommodate 40,000 cubic feet of engine air within the limits of a shell 20 feet in diameter by 82 or 83 feet in height, and three stoves can thus be made to do the work that would call for four of the common type; and this, with all the chances in favor of less time being required to heat the stove and, therefore, a more uniform temperature maintained, which is of the greatest possible advantage to the furnace.

#### The Checker Brick.

There are a number of very new changes in the fittings, all tending to simplicity and a reduction of the number of moving parts, but the most important feature which remains to be pointed out is the shape of the checker brick. This brick is designed to build a series of 9-inch square flues with  $3\frac{1}{2}$ -inch vertical walls, and the ends are so shaped that each brick is locked in its particular place, while all the joints are bonded. This last feature is of considerable importance as tending to

afford the most substantial and durable masonry, and as can be seen, this bonding is effected by the simple reversing of the same brick in alternate courses. These brick are made 9 inches deep and they are all pressed, so that there is considerable economy effected over other shapes through a minimum of breakage in transportation and in the time required to lay them.

#### The Blast Furnace as a Power Plant.

Edward A. Uehling, the well-known metallurgical engineer of New York, has contributed to the *Stevens Indicator* for January an interesting memoir in which he calculates in detail that the total amount of gas produced in the blast furnace per ton of pig iron is 10,589.62 pounds, which at 1283.09 B. T. U., makes 13,587,330 B. T. U. available. It requires 1884.38 pounds of gas to heat the blast for 1 ton of pig iron. Mr. Uehling concludes his report as follows:

Although the application of blast furnace gas to internal combustion engines is of comparatively recent date, its practicability has already been demonstrated on a commercial scale. A large number of such engines, varying from 50 to 1200 horse-power, the majority over 500 horse-power, are to-day in successful operation in Europe, Germany being far in the lead.\*

From a large number of tests it has been found that from 20 to 30 per cent. of the heat energy contained in the gas can be realized in effective power. We have found that 1 pound of blast furnace gas generates 1283 B. T. U. Now, since 2545 units are equivalent to 1 horse-power, and taking the average efficiency of the blast furnace gas engine at 25 per cent., we find that

$$\frac{2545}{1283 \times 0.25} = 7.93 \text{ pounds of gas are required per horse-power hour.}$$
Deducting from the total weight consumed in heating the blast and dividing by the weight per horse-power hour, we have 1097.76 horse-power per ton of iron produced per hour.

The power legitimately required to operate the plant should be below 200 horse-power per ton of iron per hour, but since labor saving machines are continually being added, to be on the safe side, we shall allow 250 horse-power for blowing engines, pumps for all necessary purposes, including cooling water for gas engines. For handling the raw material and product for lighting plant, &c., there still remains  $1097.76 - 250 = 847.76$  horse-power for sale or available for other useful work for every ton of iron produced per hour.

The average rate of production of pig iron in the United States for the past three months was 1,493,691 tons per month, 49,790 tons per day and 2078 tons per hour; hence if the wasteful steam power plants were replaced by internal combustion engines at all the furnaces there would be available a surplus of  $847.76 \times 2078 = 1,761,645$  horse-power.

The importance of the blast furnace as a source of power as well as the efficiency of the gas engine as a prime mover are perhaps even more vividly brought out by the following fact than by the colossal figures of available power shown above: If the coke consumed per ton of iron was burned direct under steam boilers and the steam generated all used to produce power in steam engines an efficiency of  $\frac{1097.76}{1884.38} = 1.82$  pounds of fuel per horse-power hour must be realized in order to produce an equal power to that obtained from the gas engine from the same weight of coke charged into the blast furnace, even after deducting the gas required to heat the blast.

When we consider the fact that it is quite the exception that blast furnace plants can be depended on for any surplus power, that on the contrary in the majority of plants thousands of tons of coal are fired under the boilers to assist the gas in producing the necessary steam for the wasteful blowing engines and pumps in a still more wasteful boiler plant, and compare this with the actual power possibilities of the blast furnace, it is

\* There are to-day upward of 175,000 horse-power of blast furnace engines in successful operation and in course of erection on the European Continent, principally in Germany.



somewhat surprising that so little has been done in this direction in America.

The path of economy does not lie in the direction of compounding steam cylinders or increasing the heating surface of the steam boiler plant. Money thus spent, unless it be for temporary purposes, is more or less completely wasted.

A modern blast furnace plant should not only have no fuel expense for its own power requirement, but should have a surplus of power of at least 800 horsepower for every ton produced per hour for sale, which in the majority of localities could be made the source of a handsome revenue.

To realize this the first and most imperative step is to thoroughly wash the gas; the second is to replace the steam engines by internal combustion engines. A good beginning to utilize the power stored in blast furnace gas, as herewith demonstrated, is being made by the Lackawanna Steel Company at their new works near Buffalo, where an installation of blast furnace gas engines aggregating 40,000 horse-power is now under way.

## The Chicago Pneumatic Tool Company.

### First Annual Report.

The first annual report of the Chicago Pneumatic Tool Company, Fisher Building, Chicago, has just been issued to the stockholders. Following is the address of President J. W. Duntley:

The management take pleasure in presenting herewith the first annual report of the affairs and standing of the company. While the report makes an excellent showing, yet we feel that certain conditions peculiar to our first year and tending to reduce profits for the year should be borne in mind. They are as follows:

1. The company have not had the benefit of a full year's output from all our plants, as one of these was taken over in March and one in August, 1902, showing for those plants an output during ten and five months respectively.

2. The difficulties which are always experienced in harmonizing and bringing into perfect working order interests which have previously been antagonistic.

3. The charge for old tools, made by companies which the present company took over, and which it was necessary to retire, although this company received no part of the original profits on such tools. (As old and unsatisfactory tools have been largely retired during the past year, the charge on this account should be much less the present year, and will gradually disappear entirely.)

We are pleased to report successful effort in the accomplishment of great economies in all parts of our business, including the concentration of manufacture of our various tools, and the adoption of uniform methods of reports and accounting for our various plants and sale offices. We hope in the coming year to effect further and marked economies along these and other lines.

The outlook for the year 1903 is most encouraging. All indications are that our facilities will be taxed to the utmost to supply the demand for our tools, and, indeed, we scarcely expect to be able to do so without increasing the capacity of some of our plants. The saving effected by the use of pneumatic tools is now so well and generally known that it is unnecessary for our representatives to spend time in explaining this point. They are now recognized as part of the standard equipment of every boiler shop, shipyard, locomotive works, bridge and construction works, and many other lines of manufacture, and are being rapidly introduced into stone quarries, mines, &c. Our business for January, 1903, is 50 per cent. ahead of the corresponding month one year ago.

While our domestic business is increasing in a gratifying manner, our foreign trade, which showed a remarkable increase during the last six months of 1902, promises even greater increase the coming year.

Your attention is invited to the excellent showing of quick assets, \$1,249,862.59, against current liabilities, \$401,529.85; this, notwithstanding the liberal amounts

written off for depreciation, &c., and \$134,806.14 applied to additions to plant account. Accounts payable are \$123,000 less than one year ago; \$172,000 of bills payable have been paid off during the year and none are now outstanding.

#### FINANCIAL STATEMENT, DECEMBER 31, 1902.

Assets.	
Real estate, buildings, plant, machinery, patents, good-will, &c.....	\$6,506,009.16
Capital stock of other companies at cost.....	1,096,925.00
Accounts and bills receivable.....	\$616,940.37
Less: Reserve for bad debts.....	\$5,403.05
Reserve for allowances.....	16,000.00
	21,403.05
Insurance and taxes prepaid, preliminary expenses and other items in suspense.....	595,537.32
Inventories of material, manufactured product and work in progress (at factory cost as certified by the manager).....	36,804.06
Cash in bank and on hand.....	442,217.15
	212,108.12
Total.....	\$8,889,600.81

Liabilities.	
Capital stock:	
Authorized .....	\$7,500,000.00
Less, unissued.....	1,468,400.00
	\$6,031,600.00
First mortgage 5 per cent. bonds:	
Authorized .....	\$2,500,000.00
Less, unissued.....	200,000.00
	2,300,000.00
Interest accrued on bonds.....	58,300.00
Accounts payable.....	172,598.19
Reserve for depreciation.....	\$58,218.28
Less, shortages of inventories written off.....	15,453.69
	42,764.59
Reserve for sinking fund for redemption of bonds.....	50,000.00
Dividend No. 4, payable Jan. 15, 1903.....	120,631.66
Surplus, balance of profit and loss account.....	113,706.37
(Contingent liability on bills discounted, \$99,422.34.)	
Total.....	\$8,889,600.81

Certified correct:  
S. W. PRINCE, Auditor.

We have examined the above balance sheet with the books and accounts of the company and certify it to present a correct view of the state of the company's affairs at December 31, 1902.  
PRICE, WATERHOUSE & Co.

Chicago, February 2, 1903.

Statement of Profits for the Year Ending December 31, 1902.	
Net profits.....	\$897,059.55
Less, bond interest.....	115,000.00
	\$782,059.55
Less, dividends.....	453,263.33
	\$328,796.22
Reserve for sinking fund.....	50,000.00
	\$278,796.22
Less written off: Old tools retired, depreciation of plants and inventories, reserve for bad debts, and reserve for returns and allowances.....	165,089.85
Undivided profits.....	\$113,706.37

## The Traffic Club of Pittsburgh.

The Traffic Club of Pittsburgh gave its initial banquet last week at the Hotel Henry, in that city, which was attended by about 70 members of the club and a number of invited guests. S. L. Seymour, division freight agent of the Pennsylvania Railroad, presided as toastmaster. Hon. J. H. Reed, president of the Philadelphia Company, responded to the toast, "Pittsburgh, the City of Opportunity for Young Men." Attorney J. F. Burke spoke on "An Outline of Usefulness for the Traffic Club of Pittsburgh;" C. W. Clark, president of the club and general agent of the Erie in Pittsburgh, on "Our Organization;" S. P. Woodside, traffic manager of the Pittsburgh Coal Company, on "A View of Both Sides, Railroad and Industrial;" D. H. Maloney, general agent of the Rock Island, on "How Pittsburgh Impresses a New Comer," and C. H. Kingsbury, the historian of the club, on "Unmade History." The club was organized on December 16, with a membership limit of 75 and with a waiting list of about 15. Its officers are: C. W. Clark, president; J. V. Maher, general freight agent of the Pressed Steel Company, first vice-president; E. C. Morgan, Pittsburgh agent of the Dispatch lines, second vice-president; T. J. Walters, general freight agent of the B. & O., secretary; V. Taffner, general agent of the Burlington, treasurer, and C. H. Kingsbury, commercial agent of the Norfolk & Western, historian.

## Power Required to Drive Machine Tools.

### Locomotive Shops of the Buffalo, Rochester & Pittsburgh Railway at Du Bois, Pa.

The following tests were made with the purpose of ascertaining the amount of power used by various machine tools when operating in regular, routine work, and at the same time the power lost in shafting and belting in a group driven system, which, to be more explicit, we will state as follows: If all the machines in a group were thrown on and driven at their highest capacity at one time they would in most cases probably require an amount of power approximating the capacity of the motors as they are installed in this plant. However, in the conditions of actual daily operation this never happens. Some of the tools are always either standing idle or working lightly, and the amount of power demanded hardly ever reaches half of the possible maximum total. The load factor is the ratio of the average power to the maximum.

#### Description of Shops.

Before proceeding with the results of the tests a brief description of the shops themselves may be of interest. The plant consists of five buildings—viz., the power house, a building containing the locomotive erecting, boiler and machine shops, the roundhouse, the blacksmith house and the storehouse and offices. These buildings are located on a plot of ground 32 acres in extent, and the equipment is intended to handle the repairs of about 150 locomotives, with provision for an increase of 75 engines, which is expected to cover about five years, making an estimated ultimate total of 17 engines per month. The machine, boiler and tank shops are under one roof, covering an area of 134 x 524 feet. The blacksmith shop is 80 x 140 feet, the power house 63 x 93 feet, the office and storehouse 60 x 120 feet, and in addition to these there is an oil house, 30 x 60 feet, a 16-stall roundhouse and a 26 x 140 foot coal, coke and iron storage building.

The storehouse contains general storeroom facilities on the first floor and offices, drafting room, &c., on the second floor.

The power plant, which, as above stated, is located in a separate building, is designed for the transmission of power by electricity and compressed air, and furnishes all power needed for driving the machinery, lighting the shops, grounds, a large car building plant and neighboring stations, and the further supply of steam for heating the buildings. All pipes and wires pass from the power house to the several buildings through underground galleries. The boiler equipment comprises four 200 horse-power water tube boilers, the furnaces of which are hand fired. The engine room contains the following machinery:

A Westinghouse 200 horse-power compound engine, direct connected to a Westinghouse 125-kw. compound wound generator, operating at 250 volts and 280 revolutions per minute. This generator carries the day load and supplies power for machine tools, cranes, lighting, &c. A Westinghouse 100 horse-power simple engine, belt connected to a Westinghouse 75-kw. compound wound generator, operating at 250 volts and 750 revolutions per minute. This generator carries the night load and supplies power for lighting, motor driving for special night work and the turntable. The night and day load generators are interchangeable at the switchboard. A Westinghouse 100 horse-power simple engine, belt connected to a 60-kw. two-phase generator, operating at 2200 volts, 7200 alternations and 900 revolutions per minute. This generator furnishes power for lighting the yards, the Falls Creek station, the passenger and freight stations at Du Bois and the Du Bois car shops. A  $2\frac{1}{2}$  horse-power exciter, operating at 125 volts and 180 revolutions per minute. An Ingersoll-Sergeant steam driven compressor, furnishing compressed air for the plant.

#### Tests.

The results of the tests are given below at length, with all particulars, the net power consumed by each tool or group of tools being stated. It is to be noted in reading these results that the net power consumed by the several tools and by the line shafting was not obtained directly, but by subtraction. All measurements were made by means of a voltmeter and an ammeter in the motor circuit. These indicated the electrical horse-power delivered to the motor. The brake horse-power delivered by the motor at any given load was then determined by means of the motor efficiency curve. This is a source of considerable error at low readings, since the actual efficiency of the motor as installed may differ from that given on the curve sheet. The amount of power consumed by the shafts and belts being known, and then the amount consumed with the tool running being taken, the first quantity was subtracted from the latter to give the amount actually consumed by the tool. This probably gave very nearly the correct results, since the energy lost in shafting and belting is very nearly constant at various loads. The tests were made while the shops were in full daily operation, and it was for that reason impossible in many cases to make as direct measurements as might seem desirable. In order, therefore, to present the actual conditions of each test the log has been given below in full as recorded, except that all readings are translated into brake horse-power delivered at the tool. In explanation of the small loads allotted to some of the motors, it should be stated that when they were selected provision was made for the probable increase in the capacity of the shop. Experiments are also being conducted with high speed cutting steels, which, if adopted, will considerably increase the demands for power.

These tests, in addition to furnishing accurate data relating to the power required for various tools when starting, running light and cutting, also make possible some estimation of the merits of roller bearings for shaft hangers. The line shafts are cold rolled steel and are carried on Hyatt roller bearings, and a shaft 200 feet long, without belts, could be turned by hand. But in spite of the unusual efficiency of the bearings, it will be noted that the power consumed by the tool is often less than that lost in transmission. Nevertheless, the capacity in motors required for the group drive is two to two and one-half times smaller than it would have been had each tool been provided with an individual motor. It is a question as to how far the low average power taken by large groups of tools in operation may be due to the fly wheel action of the shafts and pulleys.

The locomotive erecting, boiler and machine shop consists of a middle aisle for erecting and two shed bays equipped with shafting for driving the machine tools. Two 50-ton electric traveling cranes have a runway in the middle aisle. There are five lines of shafting driven by five shunt motors in the shed bays, and the sections are designated as wheel section and boiler section in one bay, and lathe, tool and flue sections in the opposite bay.

**Wheel Section.**—Shafting driven by a 40 horse-power shunt wound motor and operating 42-inch car wheel boring mill, 48-inch car wheel lathe, two 79-inch wheel lathes, quartering machine, 60 x 60 x 18 inch planer, 84-inch boring mill, single axle lathe, 6-foot radial drill, 18-inch slotter, band saw, No. 7 grinder, water tool grinder.

The line shaft is 200 feet long,  $2\frac{1}{2}$  inches in diameter and has 26 hangers. It was inconvenient in this instance to obtain a test of the line shaft alone. A test of the line shaft and counters only gave 1.5 horse-power.

A 15-minute test was made of a group of machines comprising a 72-inch and a 66-inch wheel lathe, each with two cuts; a wheel press operated at 50 tons, and an 84-inch Niles boring mill, a band saw belt, an emery wheel, a Pond radial drill, and a 60-inch planer with one tool cutting cast iron, with an average result of 4.6 horse-power, a minimum of 0.88 horse-power, and a maximum of 10.43 horse-power. The speed of the line shaft was 160 revolutions per minute.



Two machines were then thrown in, a 42-inch wheel lathe cutting with one tool and an 84-inch boring mill; with the wheel lathe cutting, the boring mill on starting up took 6.9 horse-power, and cutting 3 horse-power. To the above two machines were added, a tool grinder and a 79-inch wheel lathe cutting, which starting up took 6.3 horse-power, and running steadily 3.95 horse-power. To the above was added a 60-inch planer cutting a cast iron cylinder, which at starting took 10.3 horse-power, and running steadily 4.2 to 7 horse-power, or an average of 6.1 horse-power during the whole time. To the above were added another tool grinder and an 18-inch slotter. The maximum reversals of the planer and the slotter at the same instant gave 15.5 horse-power, and steady running showed 5.2 horse-power. The planer interfered somewhat with the readings. To the above was added a band saw cutting 4-inch oak, which took 5.6 horse-power. Whether the saw was cutting or not seemed to make no difference in the reading.

**Tests of Single Machines.**—Tests of single machines were then made—that is, of the power consumed by the one machine tool thrown in at a time. A 42-inch wheel lathe with one tool cutting took on starting up 4.6 horse-power, and on steady running 0.5 horse-power. An emery wheel took 0.7 horse-power. A 79-inch wheel lathe with two tools making roughing cuts on a pair of drivers took 4 horse-power. An 84-inch boring mill boring an 8-inch cylinder took 2 horse-power. A 60-inch planer cutting a cast iron cylinder took 2 horse-power, and a maximum at reversal of 8.5 horse-power. An 18-inch slotter, with tools of  $\frac{3}{4}$ -inch face, cutting steel, took 0.3 horse-power, and a maximum at reversal of 1.2 horse-power. A band saw starting up took 6.3 horse-power, and running light or cutting 4-inch oak 4 horse-power.

A group run of an 84-inch boring mill, a 79-inch wheel lathe, a 6-foot radial drill, a 60-inch planer and an 18-inch slotter gave at steady running 6.9 horse-power, and with the planer at reversal took 14 horse-power.

**Boiler Section.**—Shafting driven by a 30 horse-power shunt wound motor and operating 12-foot bending rolls, bolt cutter, stay bolt cutter, drill press, tool grinder, Brooks plate planer, horizontal punch, shear and punch, 6-foot bending rolls, 6-foot straightening rolls, 6-foot radial drill.

All the counter belts were thrown off and the line shaft tested alone, with a result of 0.3 horse-power. This line shaft is 170 feet long, 2.50 inches in diameter and has 19 hangers. The speed of the line shaft was 158 revolutions per minute. A test of the line shaft and countershafts only gave an average of 2 horse-power.

The machines comprising the first group tested were a stay bolt cutter and a bolt cutter, a No. 4 Hilles & Jones punch and shear. The No. 4 punch and shear was punching 13-32-inch holes in 3-16-inch steel plate. A 15-minute test showed an average of 1 horse-power, with a minimum of 0.2 horse-power and a maximum of 3.5 horse-power. A single tool, the No. 4 Hilles & Jones 48-inch punch and shear, was then thrown in, and starting up light took 6.9 horse-power, settling down to 0.4 horse-power. Shearing 5-16-inch steel plate, it required 3 horse-power. A 6-foot radial drill was then added, and at starting up light took 3.6 horse-power, settling down to 1.1 horse-power. A  $1\frac{1}{2}$ -inch drill cutting in steel gave 1.5 horse-power. A 6-foot radial drill and bolt cutter required 1.1 horse-power. The 12-foot rolls were then added, and starting up light showed 7.3 horse-power, settling down to 4.75 horse-power. Rolling steel plates,  $\frac{1}{2}$  x 8 inches, required 5.3 horse-power. A test of line shaft and counters with the 6-foot radial drill cutting steel with  $1\frac{1}{2}$ -inch drill and a punch and shear running light showed 2 horse-power. A 1-inch stay bolt cutter added to the above took on starting up 4.5 horse-power, and cutting 12 threads per inch gave 2.1 horse-power.

**Lathe Section.**—Shafting driven by a 30-horse power shunt wound motor and operating 24-inch crank planer, 36 inch x 36 inch x 20 foot planer, 51-inch boring mill, 16-inch shaping machine, 24-inch lathe, 24-inch drill press, 37-inch boring mill, two 22-inch lathes, three 16-inch lathes, two 18-inch lathes, 28-inch lathe, 43-inch lathe, 2 x 24 inch flat turret lathe, two 26 inch x 26 inch

x 10 foot planers, 60-inch horizontal boring machine, water tool grinder, centering machine.

The line shaft and counters gave 4.1 horse-power. A test of the line shaft with counter belts off gave 0.7 horse-power. The speed of the line shaft was 155 revolutions per minute. The line shaft is 180 feet long, 2½ inches in diameter and has 22 hangers.

A 15-minute test was made of a group of machines comprising two 26-inch planers and one 36-inch planer, cutting steel with one tool each, a turret lathe, an emery wheel, three 16-inch lathes, two 22-inch lathes, a 36-inch boring mill, a drill press and a shaper, all in operation. The readings gave an average result of 6.9 horse-power, a minimum of 4.74 horse-power and a maximum of 15 horse-power.

A group run of a 26-inch planer, three 16-inch lathes, an 18-inch lathe, a 24-inch lathe, a 16-inch shaper, a 24-inch drill press and a centering machine in operation required at steady running 2.4 horse-power, and at reversal of the planer 7.6 horse-power.

A single 26-inch planer cutting cast iron took 1 horse-power, and at reversal 3.5 horse-power. A 16-inch shaper cutting 1-32-inch steel at 12-inch stroke took 0.9 horse-power, with a minimum of 0.2 horse-power and a maximum of 1.4 horse-power. A 24-inch turret lathe cutting required 0.3 horse-power. A 24-inch lathe boring brass took 0.03 horse-power.

**Tool Section.**—Shafting driven by a 20 horse-power shunt wound motor and operating tool grinder, drill grinder, 21-inch drill press, 16-inch lathe, milling machine, grinding machine, three 18-inch turret lathes, 24-inch drill press, 28-inch lathe, No. 10 vertical milling machine, two spindle rod drills, 14-inch pillar shaper, 16-inch lathe, 26 inch x 26 inch x 6 foot planer, 32-inch drill press, surface grinding machine, water tool grinder.

The line shaft and counters required 2.8 horse-power. The line shaft is 140 feet long, 2½ inches in diameter and has 20 hangers. It was not convenient to obtain a test of the line shaft alone. The speed of the line shaft was 155 revolutions per minute. The line shafts of the lathe and tool sections can be connected by a clutch coupling and the whole operated from either motor.

A group test was made of a 16-inch lathe, a drill press and a grinder, all in operation, with a result of 1.9 horse-power. A single grinder took in starting up 9.7 horse-power, and grinding 1.95 horse-power. A 28-inch lathe took on starting 4.7 horse-power, and cutting steel 2.5 horse-power. A group run of two 16-inch lathes, a shaper and two grinders in operation showed 2.5 horse-power.

**Flue Section.**—Shafting driven by 10 horse-power shunt wound motor and operating flue welder, flue cleaner, two No. 7 Jarecki pipe threading machines, two pipe cutters.

A test of the line shaft with all counters gave 0.6 horse-power. A test of the line shaft gave 0.035 horse-power. The line shaft is 90 feet long, 2½ inches in diameter and has 12 hangers. A single flue welder with blowing fan attached required on starting up 7.1 horse-power. Running light it took 3.4 horse-power. The pipe cutter cutting 2½-inch pipe took 0.06 horse-power. The auto-flue cleaner, cleaning 2-inch flue, took 0.2 horse-power.

**Blacksmith Shop.**—The blacksmith shop is driven by a 40 horse-power shunt wound motor, which is belted to 75 feet of 2½-inch line shafting, with 12 hangers. The apparatus driven comprises a bolt header, a 25-inch punch and shear, a cutting off saw, a tool grinder, a 40-inch planer, a drill press, a 50-pound hammer, a blower and an exhaust fan.

A test of the line shaft and counters, with grindstone and two blowers constantly in operation, gave 14.5 horse-power. The bolt header added to the above gave on starting 7.8 horse-power, running light 0.5 horse-power, and heading 1-inch bolts 3.5 horse-power. A No. 2 Hilles & Jones punch and shear added to the above, first condition, gave on starting up 5.5 horse-power, running light 0.5 horse-power, and shearing 1½-inch round bar 4.3 horse-power.

**Turntable.**—The turntable is 70 feet long and is operated by a 10 horse-power motor of the street railway type, geared to an independent traction wheel, the

driving combination being supported in a pivoted frame, or "donkey," which rests with all its weight upon the turntable track, even when the table is tipped by a locomotive. The power is led to the motor through a sliding contact placed on the bridge above the center of the turntable. With the table running light and the controller on full, a test gave 4.45 horse-power. In throwing on the controller and accelerating up to full speed 5 horse-power was attained, which dropped to a constant of 4.45 horse-power. With a class S-2 locomotive on the table, weighing with tender approximately 286,000 pounds, a test gave 7.35 horse-power when accelerating to full speed. When full speed was obtained the test showed 5.43 horse-power.

**Power House.**—Switchboard readings of the ammeter and voltmeter were taken every five minutes from 1 p. m. to 5.30 p. m., with averages of 220 volts and 250.7 amperes, or 73.8 horse-power. The minimum current was 200 amperes, or 59 horse-power, and maximum cur-

tons. The company have other contracts booked and are operating their plant to full capacity, having facilities for fabricating about 1000 tons of steel a month. At the recent annual meeting of this concern directors were elected, as follows: W. E. Stone, J. J. Holloway, George A. Laughlin, Charles Paxton, Edward Hazlett, J. A. Hess, J. H. Barrett, W. H. Frank and Earl Oglebay.

### The Eagle Marine Gasoline Engine.

In the marine gasoline engine built by the Eagle Bicycle Mfg. Company of Torrington, Conn., in 2, 4½ and 6 horse-power sizes, it is possible to positively and instantaneously regulate the speed to almost any given number of revolutions per minute, and the engine will run steadily at these various speeds without increasing explosions. This speed control is obtained without in any way interfering with the vaporizer, which, when once adjusted to form a perfect mixture, need not be

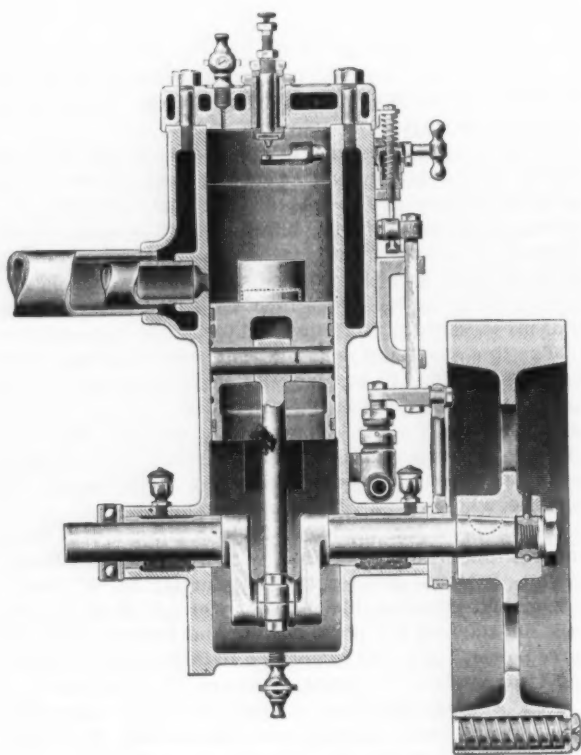


Fig. 1.—Sectional Elevation.

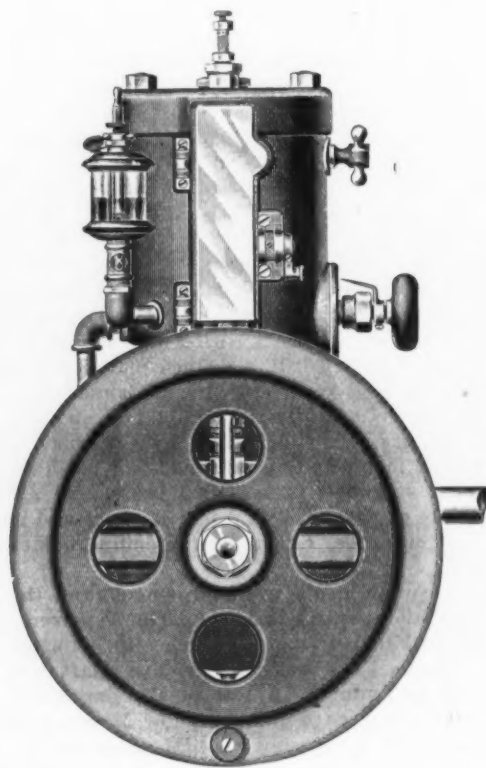


Fig. 2.—End Elevation.

### THE EAGLE MARINE GASOLINE ENGINE.

rent 300 amperes, or 88.5 horse-power, the average of which is 250 amperes, or 73.75 horse-power.

These tests were carried out by H. M. Palmer and George H. Gibson of the Westinghouse Electric & Mfg. Company, and were made possible by the courtesy of F. T. Hyndman, master mechanic, and the assistance of C. D. McArthur, chief draftsman, of the Buffalo, Rochester & Pittsburgh Railway Company.

**West Virginia Bridge & Construction Company.**—The new plant of the West Virginia Bridge & Construction Company at Wheeling, W. Va., has been completed and is now in full operation. The main building is 100 x 200 feet, of steel construction, with slate roof and is equipped with transverse systems of cranes and hoists. Power is furnished by electricity and gas engines. The West Virginia Bridge & Construction Company are filling some important contracts, among these being one of the main buildings of the St. Louis Exposition, which will be of 100 foot span and will require close to 1000 tons of steel, and the annex to the Joseph Horn Company office building, Pittsburgh, requiring about 650

changed. The speed is governed by a simple device which gives a wide range in time of spark ignition with relation to the position of the piston, and in this connection there is used a throttle valve by which the amount of gas mixture admitted into the explosion chamber can be regulated to a nicety. The engine is of the single cylinder, two-cycle type, in which there is an explosion of vapor at every revolution or downward stroke of the piston.

The main features of the engine will be understood from the accompanying engravings. The ignition mechanism is located on the face of the cylinder and is operated by an eccentric, *a*, on the shaft. The office of this device is to bring the movable electrode *i*, which passes through the front wall of the cylinder, in contact with the stationary insulated electrode *j*, which passes through the cylinder head, and also to instantly break the circuit when the piston is in the proper position. The contact points are of platinum and are brought into contact by the strong spring *g*, located on the upper slide rod. They are separated by the action of the same spring forcing the spring back against its seat after it is disengaged from the upright oscillating



lever *f*, attached to the upper end of the lower slide rod *d*. To regulate the advancement of the spark is the purpose of the lever placed in front of the index plate *m*. When this lever is moved upward the lever *f* will disengage from the sleeve above it before it has reached its highest point, causing an advancement of the spark in proportion to the distance the index lever is raised.

The firing pin *j* is threaded into a sleeve, which is insulated from the sparking plug and cylinder head. This is adjusted so that the points are not separated more than  $\frac{1}{8}$  inch when the movable electrode *i* is in its lowest position.

The throttle valve, which controls the passage of the

### James M. Swank's Statistical Souvenir.

We have received, with the compliments of the American Iron and Steel Association, Philadelphia, a copy of a compilation of American and European iron, steel, iron ore and coal statistics, which has been issued as a souvenir of the completion by James M. Swank on December 31, 1902, of 30 years of continuous service, first as secretary and afterward as general manager of the association. These statistics cover the production of the United States, Great Britain, Germany, France and Belgium, revised to the end of 1901. The tables begin in most cases as far back as authentic statistics are available. While the book comprises only 32 pages, a great

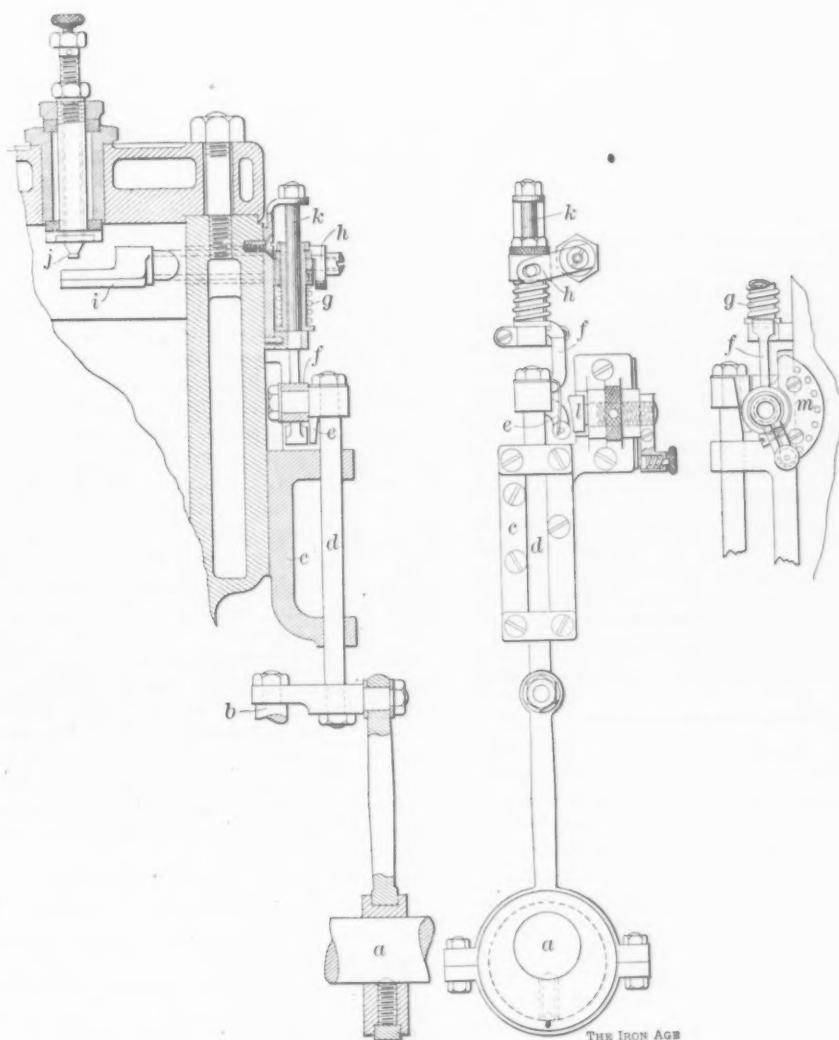


Fig. 3.—Details of Engine.

### THE EAGLE MARINE GASOLINE ENGINE.

mixture from the crank case into the firing chamber, is located at the side of the cylinder. It is provided with an index to denote the position of the valve. The vaporizer is at the side of the crank case and the amount of oil admitted is governed by a needle valve. The main or crank shaft bearings are of bronze surrounded by an oil reservoir. The oil is transmitted to the surface of the shaft by a felt wick inserted through the bottom of the bronze sleeves and extending to the bottom of the oil channel. The crank pin bearing is lubricated by a compression cup, located in the front end of the crank shaft. A hole drilled through the center of the shaft leads to a hole through the crank arm and pin and terminates directly in this bearing. In its design the engine is extremely simple and compact. The trunk piston and the inlet and exhaust openings are so arranged with relation to each other as to do away with all valves.

deal of most valuable matter has been included, and its statistics are presented in such compact form that it will undoubtedly be prized as a work of reference. It is of pocket size and bound in flexible cloth covers.

**The Carnegie Technical School.**—At Pittsburgh, a site has at last been selected for the Carnegie Technical School, the money for the building to be furnished by Andrew Carnegie. The ground selected is known as the Flinn-Magee tract and contains about 32 acres. It is on Woodlawn avenue, overlooking Schenley Park, and the property has been optioned for \$350,000. Funds are in the treasury of Pittsburgh to purchase this site, and it is likely councils will soon authorize the acquiring of the land. As soon as a site is secured work on the building of the Carnegie Technical School will be started at once.

## Notes from Great Britain.

### The Market.

LONDON, January 24, 1903.—There are two features of the market worthy of notice this week: 1. Pig iron tends to stiffen in price and in consequence manufacturers of finished goods are more than ever disconcerted; 2. In finished iron, sheets and black sheets there is increasingly keen competition. For example, Lancashire bars are selling in the Midlands at £6 2s. 6d. Against such prices the Staffordshire producers cannot make headway. Again, galvanizers find it difficult to cope with the competition of South Wales and other districts more favored in regard to shipping facilities. Steel quotations are firm all round, on the strength of a good weight of business recently obtained. In this department we are all bulls. The rolling stock makers are quite happy and among others have recently secured an order for 1000 wagons. This has a good effect on the makers of wheels, axles and underframes. Tin plates have advanced 3 pence, in consequence of the rise in price in tin. Standard quotations are the same as last week.

### French Locomotive on an English Railway.

The Great Western Railway Company are arranging with M. de Glehn of the Société Alsacienne, Belfort, to send over a four-cylinder compound locomotive for trial in this country. For some years locomotives of this type have been doing exceptionally fine work on the Nord, Midi and other French lines. June is stated as the probable date of the arrival of the French engine in this country. I may mention it is the De Glehn compounds that for some years past have covered the journey between Calais pier and Paris, with a single stop to change engines at Amiens, in 3 hours 15 minutes, the distance being 185½ miles. This is exactly 35 minutes less time over the same distance than is taken by the fastest trains in this country. With the exception of Mr. Webb of the London & North Western, English locomotive engineers have not hitherto shown much faith in the compound system, whether with two, three or four cylinders.

### More About Water Tube Boilers.

I have all along contended in these columns that whatever adverse reports might be made upon water tube boilers the navy was practically certain to continue to use them. In a defense of his shipbuilding career, which is just now attracting considerable attention over here, Sir William H. White, the ex-Chief Constructor of the Navy, says of water tube boilers that British war ships are "at no disadvantage as compared with all the most recent and important ships of foreign navies which are similarly equipped. When experience has been gained with the various types of boilers fitted, or to be fitted, in ships building, there would be no guidance for the selection of the best system for future use. Whatever may have been the disadvantages of water tube boilers, the weight of authority, both home and foreign, is distinctly in favor of the practical necessity for continuing their use in fighting ships."

These words remind me of another report of the Boiler Committee, which has just been issued, dealing with the trials of the gunboats "Sheldrake" and "Seagull," and the sloops "Espégle" and "Fantôme." The "Sheldrake" and "Espégle" are fitted with Babcock & Wilcox water tube boilers, while the "Seagull" and "Fantôme" are fitted with the Niclausse water tube boilers. The installations in these vessels are necessarily small, and the results obtained may not be realized in larger vessels. None the less, the report is a valuable one. The comparisons drawn between the Niclausse and Babcock & Wilcox boilers may be summarized thus:

**Production of Steam.**—The power required was on the whole obtained more readily from the Babcock & Wilcox than from the Niclausse boilers. This was specially noticeable on the full power trials of the "Sheldrake" and the "Seagull," but it is to be remembered, however, that the heating surface of the "Sheldrake's" boilers is 15 per cent. greater than that of the "Seagull's" boilers.

**Absence of Defects During Working.**—The trials were completed in each ship without any defects having been developed in the boilers themselves, but the series of trials in each of the vessels was so short that the boilers were not really tested as to their freedom from developing defects while being used even for comparatively brief periods on actual service.

**Dryness of Steam.**—The Niclausse boilers gave wetter steam than the Babcock & Wilcox boilers. In this connection it is to be noticed that the steam collector of each of the Babcock & Wilcox boilers of the "Espégle" is 3 feet 6 inches internal diameter by 9 feet 6 inches long, while the steam collector of each of the Niclausse boilers of the "Fantôme" is 2 feet 7¼ inches internal diameter by 5 feet 11 inches long; thus the area of water surface is about 130 square feet in the "Espégle" and about 60 square feet in the "Fantôme."

**Loss of Feed Water.**—The installation of machinery fitted with Niclausse boilers on every occasion showed less loss of feed water than the similar installation fitted with Babcock & Wilcox boilers. This was very noticeable on the coal endurance trial of the "Fantôme," where the evaporators were not used throughout the trial, although on a similar trial of the "Espégle" it had been necessary to use one evaporator for 14 out of the 90 hours of the trial.

**Gain in Efficiency in Later Boilers.**—The boilers of the sloops were new in 1901, whereas those fitted in the torpedo gun boats were new in 1897. Comparing the efficiencies of the earlier and later Babcock & Wilcox boilers the maximum efficiency of the boilers of the "Espégle" reached 73.2 per cent., as against 66.0 per cent. in the "Sheldrake," or an improvement of about 11 per cent., and the average efficiency in the "Espégle" is 67.8 per cent., as against 63.1 per cent. in the "Sheldrake," or an improvement of 7 per cent. Turning now to the Niclausse boilers, the maximum efficiency in the case of the "Fantôme" was 69.8 per cent., as against 66.9 per cent. in the "Seagull," showing an increase of about 4 per cent., and the average efficiency in the "Fantôme" is 63.4 per cent., as against 63.2 per cent. in the "Seagull," or practically the same. The results with the Babcock & Wilcox boilers seem to show that the large tube boilers as fitted in the "Espégle" are more efficient than the small tube type fitted in the "Sheldrake." As the arrangement of heating surface is the same in both the earlier and later boilers of the Niclausse types, the comparative results obtained with the "Seagull" and "Fantôme" are what might have been expected.

**Boiler Feeding.**—Experience on the long trials of the "Espégle" and "Fantôme" showed that the boiler feeding in these ships could be easily regulated by hand. This is a very distinct advantage possessed by Babcock & Wilcox and Niclausse boilers, although it is to be remembered that there are only four boilers in each of these installations. It will, however, no doubt be found that automatic feed regulation will be a valuable adjunct in similar boilers in large installations.

**Automatic Feed Regulators.**—The automatic feed regulators fitted in the "Fantôme" worked throughout the trials in a satisfactory manner, without giving any trouble. Those fitted in the "Espégle" were not so satisfactory, as they occasionally stuck and allowed the water in the boilers to fall below the proper working level before opening, or allowed too much water to enter the boilers before they closed. The feed regulators of the "Sheldrake" and of the "Seagull" call for no special remarks, but they required attention at times.

### Coal Cutting Machinery.

How is it that in England so little resort is made to coal cutting machinery? The question is not easy to answer, but would seem to lie in the fact that coal mining labor in this country is more highly efficient than elsewhere. In Great Britain last year only 1.4 per cent. of the coal raised was by the aid of coal cutting machinery, whereas in the United States 24 per cent. was so obtained. Charles Allen, president of the Derbyshire Under Managers' and Deputies' Institute, is interested in some mines in France where they have diffi-



culty in getting anybody to go down and get coal. Instead of having an output of 1000 tons per day, they only raise about 2000 tons per month. The coal deposits are there, however. They have seams in France of enormous thickness, one of 28 feet, and Charles Allen's company are working one 16 feet thick. As the population will not go into the mines, much preferring to work as farmers or grape growers, it seems to me that here is an excellent opportunity to push the sale of coal cutting machinery. In Great Britain I doubt very much if much advance will be made in this direction. The miners as a body are organized almost to the last man and may be depended upon not to permit any machinery which in present circumstances will lead to increased unemployment.

#### The Metric System.

Are we ever to have a metric system? The English law at the present time permits the metric or decimal system, but does not enforce it. As a matter of fact there is a very strong weight of opinion, not merely prejudiced, but also scientific, against the introduction of the decimal system. This aspect of the question has recently been very vividly brought out in a discussion at the Institution of Electrical Engineers, when Alexander Siemens, the past president, opened a discussion in favor of the metric system, and Sir Frederick Bramwell opposed, speaking strongly in favor of the British system. The points put by Alexander Siemens are those we commonly associate with the metrical system. The reasons advanced by Sir Frederick Bramwell are not so familiar. Sir Frederick Bramwell takes his stand upon the frank contention that the British system involves the use of a less number of figures in working out details than would be involved in the decimal system.

Occasionally we hear of some contract lost because the British manufacturer did not quote in decimals or metrically. This creates a little hubbub and the papers write strong articles calling upon the country at large to adopt the metrical system without delay. But the dead weight of opinion in this country is in a state of contentment with our present weights and measures.

#### Belgian Rails for London Trams.

The London County Council, after having taken, as they thought, the necessary precautions against the importation of foreign rails for their new tramways, find that the rails are obtained through a Glasgow merchant from the Société Anonyme des Acieries d'Angleurs of Belgium. The contract was given to McLellan's of Glasgow, the amount of the tender being £33,876. On the point being discussed at the last meeting of the County Council, the chairman of the Tramways Committee said that, so far as quality and delivery were concerned, they had had everything but satisfaction from English rails, while they had had every satisfaction from those which came from Belgium.

#### The Present State of Employment.

One of the best guides to the state of trade is to be found in the official returns of unemployment in the various trades. On December 31 the unemployed reached 5.5 per cent., compared with 4.8 per cent. in November and 4.6 per cent. in December, 1901. The average percentage of unemployed for the past decade has been 5.3, so that it will be seen that general unemployment is on the increase and is even now above the average. In iron and steel works employment in December was practically the same as in November, but compared with a year ago there was a marked increase in the number of unemployed. Changes in the rates of wages reported in December point, on the whole, to a decrease in current rates. In the pig iron industry decreases in wages are reported among blast furnacemen in West Cumberland, Millom and Askham, Ulverston, Barrow-in-Furness, North Staffordshire, Shropshire and South Wales. In the Cleveland and Durham district and South Lancashire an advance of 2 per cent. under the sliding scale was effected. A sure sign of anxiety in connection with these decreases in current rates of wages is that the men have accepted them almost without protest. S. G. H.

## The Naval Appropriation Bill.

### Provision for Three New Battle Ships and One Cruiser.

WASHINGTON, D. C., February 10, 1903.—The House Committee on Naval Affairs on the 6th inst. reported the annual naval appropriation bill for the fiscal year 1904, and that measure has been placed upon the calendar with the understanding that it will be promptly taken up for consideration. The total sum appropriated is \$79,048,420.15, as compared with estimates of nearly \$85,000,000, and the appropriation for the fiscal year of 1903 of \$78,856,363.13. The amount carried by the pending bill is therefore but very slightly in excess of the amount to be expended during the current fiscal year, and in explanation of the provisions of the bill the report of the committee says that "after a most careful consideration of all these estimates, having in view an economical expenditure of public money without injuring the efficiency of the naval service, the committee made deductions of the amount of \$6,142,089.43."

The naval programme as agreed to by the House Committee involves the construction of three first-class battle ships, one first-class armored cruiser, two training ships and one brig, the text of this feature of the bill being as follows:

"That for the purpose of further increasing the naval establishment of the United States, the President is hereby authorized to have constructed by contract three first-class battle ships carrying the heaviest armor and most powerful ordnance for vessels of their class upon a trial displacement of not more than 16,000 tons, and to have the highest practicable speed and great radius of action, and to cost, exclusive of armor and armament, not exceeding \$4,212,000 each; one first-class armored cruiser of not more than 14,500 tons trial displacement, carrying the heaviest armor and most powerful armament for vessels of its class, and to have the highest practicable speed and great radius of action, and to cost, exclusive of armor and armament, not exceeding \$4,659,000; two steel ships to be used in training landsmen and apprentices, to be propelled by sail, and to cost, exclusive of armament, not exceeding \$370,000 each; one wooden brig, to be used in training landsmen and apprentices at stations, to be propelled by sail, and to cost, exclusive of armament, not exceeding \$50,000."

Before agreeing to the above provision, the committee examined with considerable care the proposition of Representative Dayton, printed in these columns last week, for a continuing naval programme, and decided that it was brought forward at too late a date to permit of its incorporation in the pending bill.

An important feature of the report of the Naval Committee is the recommendation for a large increase in the number of officers for the navy. The point is made with much emphasis that unless additional officers are provided it is useless to increase the number of ships, for there is now an insufficient number of both officers and men to properly man all the vessels which are in commission, or which might be put in commission if the personnel was sufficiently large to warrant it. Continuing, the report says that the Naval Committee saw a year ago the approaching condition and called the attention of Congress to it in its report, and recommended at that time the appointment of 500 additional cadets at the Naval Academy, 125 to be appointed each year during the four succeeding years. "Now the Naval Committee," says the report, "presses with renewed vigor the necessity for immediate action at this session of Congress. It cannot and must not longer be delayed. Unless Congress provides for this situation we must stop the construction of ships and the authorization of new ones, for of what use are ships without officers to command them?"

To meet this situation the committee recommends that double the statutory number of cadets at the Naval Academy be authorized in accordance with a plan set forth in detail. It is also suggested that the number of officers of all ranks from ensign to lieutenant-commander, and including surgeons, paymasters and com-

structors, be increased in accordance with a schedule submitted. With a view to providing the necessary facilities for educating a larger number of cadets the total appropriation for the new Naval Academy is increased from \$8,000,000 to \$10,000,000, and the Secretary of the Navy is given full power to modify all plans in his own discretion.

In connection with the proposed increase in the Navy the announcement is made that Rear-Admiral Bowles, chief constructor, has submitted a report to the Secre-

### The Newhall Vault Light.

The use of glass prisms, placed in the sidewalk, for the lighting of cellars and subcellars, has been widely adopted of late years, especially in large cities, where space is so valuable. With the vault light here illustrated any size or shape of opening can be covered without the expense and delay of making special castings. It possesses the strength necessary to sustain heavy loads and has the maximum amount of lighting

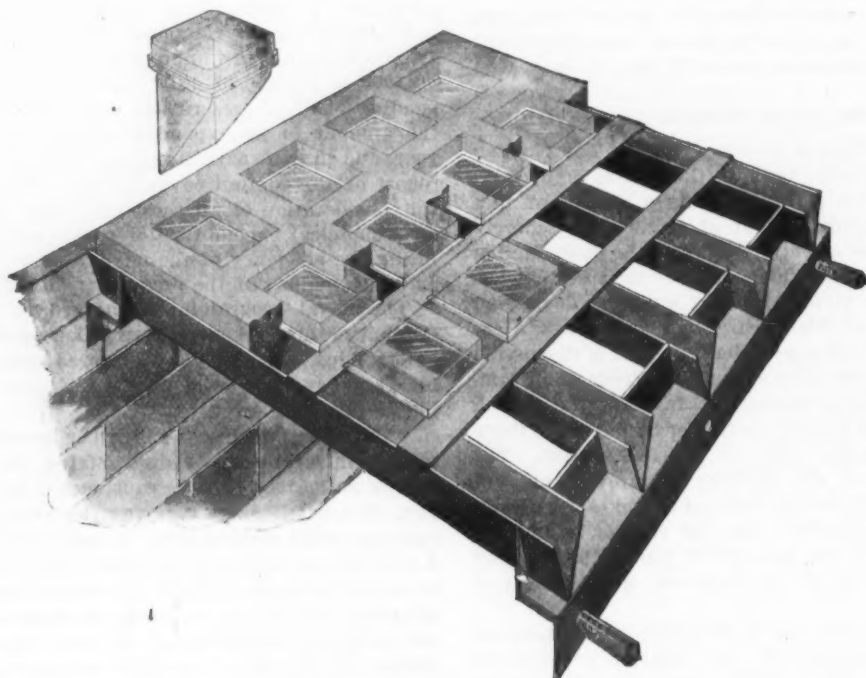


Fig. 1.—View Showing the Construction.

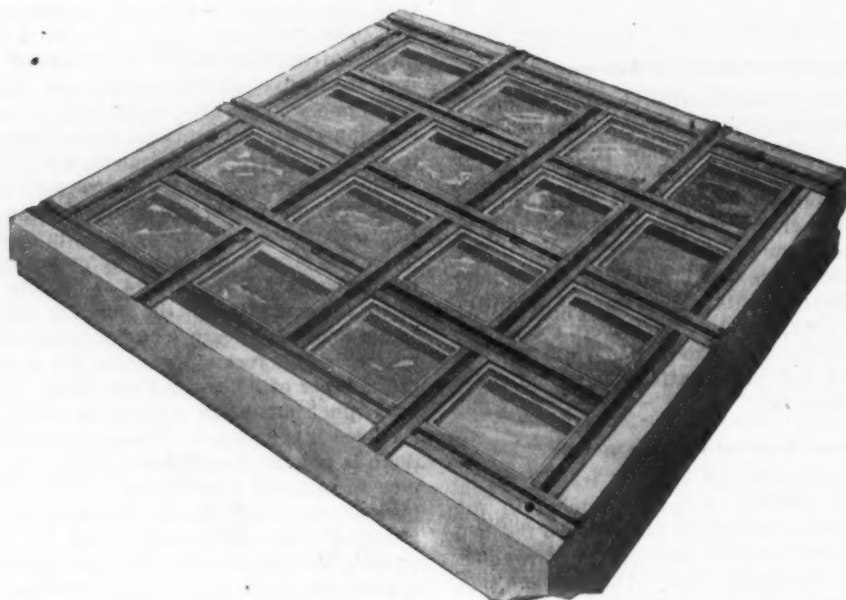


Fig. 2.—Vault Light with Safety Tread.

### THE NEWHALL VAULT LIGHT.

tary of the Navy, opposing the purchase of the Chilean battle ships and Argentine armored cruisers, which have been offered to the United States, "unless an emergency exists requiring their acquisition." It is stated that Rear-Admiral Bowles has made a comparison of the offensive and defensive qualities of the vessels and finds them inferior to our own ships of the same classes and dates of construction, and it is added that they will not be ready for service for several months. It is improbable, therefore, that any recommendation will be made to Congress for the purchase of these ships.

W. L. C.

surface. The steel construction, Fig. 1, is formed of two Z-bars, attached to opposite sides of the opening, which support the 60 degree angles. Across these angles are laid the steel strips and the prisms are then placed in position, as shown. This leaves a trough on each side of the prisms, which is filled with concrete, forming a surface smooth with the top of the glasses. This vault light is furnished either with or without the safety tread, which consists of lead strips placed between the glasses and flush with the top, Fig. 2. This makes a secure footing on inclined sidewalks, or where there is heavy traffic. The manufacturers are the New



Jersey Foundry & Machine Company, 9 Murray street, New York.

## The Lake Superior Ore Mines.

### Minnesota Ore Freight Rates.

DULUTH, MINN., February 7, 1903.—It may be remembered by iron ore shippers that two years ago the Minnesota State Railway and Warehouse Commission made an order reducing freights on iron ore from the iron ranges of the State to Lake Superior 20 cents a ton, making the rate from the Mesaba 60 cents, from Tower 70 cents and from Ely 80 cents. This was appealed by the roads and fought out on the question of interstate commerce, the roads contending that the traffic in ore destined to points outside the State was not intra, but inter, state. This argument was made before a commission differing in membership from that making the order appealed from, and this commission ruled that the contention of the roads was correct and that it had no jurisdiction in the matter. Now the matter has been again brought up, this time by a bill in the Legislature introduced at the request of C. F. Staples, one of the three members of the State Railway and Warehouse Commission. This bill provides that when the commission shall dismiss a proceeding on the ground that it has no jurisdiction, any member of the commission, or the Attorney-General of the State, shall be authorized to bring the question of jurisdiction before the courts for settlement. The bill provides, in particular, that whenever the commission shall dismiss any proceedings looking toward a change in rates of freight on the ground that the tariffs involved are interstate commerce and that therefore the State has no jurisdiction, the commission shall, on the request of any member or of the Attorney-General, certify its record and the evidence to the district court of any county in which the common carrier involved operates. That upon the filing of such certificate there shall be pending in such court a civil action for the purpose of determining on the evidence submitted before the commission the question of jurisdiction, or to take further evidence if so desired. If the commission is reversed it shall thereupon again take up the question of rates for a determination as to their reasonableness. The bill is directed against the iron ore tariffs and nothing else.

It is quite well known that Mr. Staples and the Attorney-General were both of the opinion that the commission erred in waiving jurisdiction, they thinking that the ore traffic was not interstate. The majority of the commission, backed by its special counsel, M. E. Clapp, now United States Senator, overruled Mr. Staples. If the bill now before the Legislature becomes law, as is more than probable, it may apply to the case under consideration, providing that case has not been dismissed by a formal order, which has not been done to this date. It is apparent, then, that the 80-cent freight rate from mines to Duluth is not entirely without antagonism.

### The Hill Negotiations.

But actual mining interests desiring a reduction of the rate are diminishing day by day. The probable early consummation of negotiations between J. J. Hill and the United States Steel Corporation for a lease by the latter of the ore lands of the former takes a large element of future disputants for lower freights out of calculation. This deal is a startling one and in its inner history presents some interesting facts. It is understood here that under the terms of the negotiations now going on Mr. Hill is to be guaranteed \$1.80 a ton for all his Mesaba ore as it is shipped to Lake Superior. Of this 80 cents is for freight, whether the ore is carried over his line or any other—of course it will be carried over his road—and the \$1 is for royalty. The present going rate of royalty on the Mesaba range will perhaps average 27 cents a ton. It is understood that the Steel Corporation are not to be forced to mine Hill's ore faster than they require it, excepting that minimums on leases turned over by him must be maintained. This will not be a serious proposition, as most of these minimums are on lands that are now operated by outside companies,

whose holdings are, of course, withheld. The magnitude of this deal is not easily exaggerated, either to the Steel Corporation, who gain control of the one great bulk of explored Mesaba land that would afford a possible rival important ore holdings; or to Mr. Hill, who secures a royalty far beyond the wildest dreams of the most enthusiastic optimist; or to the holder of outside ore lands, who will thus find his holdings materially increased in value and relative importance.

### Little Bessemer Ore Available.

Late meetings of the Bessemer Ore Association in Cleveland, at which the question of ore price for the coming season has been discussed, call attention to the narrowing circle of membership in this most important organization. With the various grades from Aragon and Pewabic in the Steel Corporation's hands, there is practically no Bessemer ore for sale from the Menominee range. There is none at all from the Vermillion. The Cleveland Cliffs Company have a little, a very few hundred thousand tons, from the Marquette, and since the sales of Champion, Republic and other mines that is about all from the Marquette district. On the Gogebic Cleveland Cliffs have Ashland, which may be good for 500,000 tons a year. Schlesinger has the product of his mines, not large; Sellwood has the Brotherton and Sunday Lake, and there are a few explorations by several Cleveland interests that may bring more. Pickands, Mather & Co. have some ore there, but they are very closely identified with the Lackawanna Steel Company and will probably not press ore on the market. That is all the old range Bessemer, leaving Mesaba only. Mesaba Bessemer are in almost as close quarters as the rest. Pickands, Mather & Co. are interested in a number of mines, and these will be counted out after a while. Drake, Bartow & Co. have several properties gathered in by Joseph Sellwood with great skill, and these are sellers of ore. Other Cleveland concerns have considerable ore for sale. Most of the remaining mines of the range are in the hands of the Steel Corporation or of some one or other of the various outside steel makers, and none of these latter are going to sell ore very long.

The Great Northern road is to build a cut off line from the center of T 57 R 21, running almost due east, to intersect its main line to ore docks about 10 miles south from Virginia. This is in order to save distance on its immense tonnage originating west of Hibbing and now hauled a few miles north before it is taken south to the docks, and also in order to make a detour around the town of Hibbing, which seems to be entirely underlain by ore and where mines to be opened shortly will undermine the tracks. The problem of running railway lines into Hibbing and its mines is becoming a serious one, on account of the uniformity and width of the ore body at that point. In order to reach some mines there it is evidently absolutely necessary to run over ore bodies, and these will be mined out in time.

### New Mesaba Mines.

Three new mines of the western Mesaba are to be opened by the milling system; these are the Buffalo & Susquehanna, at Hibbing; the Cleveland Cliffs' Crosby property, in 32-57-22, and the South Clark, in 28-58-20. The Crosby lies within 25 feet of the surface, but its ore is of so mixed a character that it is not practicable to mine it by steam shovel, as would be done were its grades uniform.

All work of exploration on the Josephine mine, Michipicoton district, has been closed temporarily. The results so far at this property have been such as to warrant an active continuance and operations will doubtless recommence later. In all probability somewhere on the Michipicoton range larger bodies of ore will be found than have yet been discovered. The Elsie nickel mine, at Sudbury, bought some time ago by the Lake Superior Power Company, has also been temporarily closed, though it is expected that operations will resume toward spring.

D. E. W.

**Steel & Iron Aluminum Coating Company.**—The annual meeting of the stockholders of the Steel & Iron Aluminum Coating Company, Connellsville, Pa., was held recently, at which George J. Humbert was elected

president; H. P. Snyder, vice-president, and W. H. Kirchhoff, secretary and treasurer. This company are manufacturers of aluminum coated iron and steel sheets to be used in place of galvanized, and for which they have a very large demand. They are used as a substitute for copper and they can be soldered with common solder. The company are installing considerable new machinery at their plant at Connellsville.

## The Status of the Eight-Hour Bill.

### Strong Probability That It May Not Be Passed,

WASHINGTON, February 10, 1903.—The advocates of the pending Eight-Hour bill are planning to secure consideration for that measure immediately after the Statehood bill is disposed of, and the officials of the American Federation of Labor express much confidence that the time necessary for the discussion of this bill will be granted by the Senatorial Steering Committee, which has charge of the legislative programme.

While it is well understood that the labor leaders are making every possible effort to have this bill brought forward, there is considerable doubt among the most experienced observers of Congressional affairs that they will be able to have it taken up immediately after the Statehood bill. The last named measure has been pending as the unfinished business of the Senate since Congress convened on December 1 last, and a large number of important bills have therefore been held up for lack of consideration. Congress will adjourn three weeks from to-morrow, and with but 18 legislative days remaining it will not be possible to dispose of all of these measures, and it is believed that several of them will fail for lack of consideration. The annual appropriation bills, too, have been considerably delayed by controversies in committee, so that a large part of the remaining time of the session must be given up to purely routine business.

In view of the congested condition of legislation the Steering Committee is considering the advisability of framing a programme for the remainder of the session, which shall consist only of measures to which there is no serious opposition and which, therefore, will provoke little or no debate. If this programme of bringing forward unobjectionable measures first is adopted, as now seems likely, the Eight-Hour bill will be left until very near the end of the present session, if, indeed, it is not crowded out altogether.

### The Bill Steadily Losing Ground.

It is a fair statement that this measure has steadily lost ground since it was reported to the Senate on December 20. The opposition of manufacturing interests throughout the country was foreshadowed by the protests filed during the hearings before the Senate Committee. But the probable effect of the bill upon the Government was not comprehended even by the members of the committee. Recent developments, however, have made it clear that all departments of the Government would be greatly embarrassed should the bill become a law. Certain communications from manufacturers giving notice to several of the departments of the cancellation of contracts in the event of the passage of the Eight-Hour bill were recently referred to in these dispatches. Within the past fortnight letters and telegrams of this general tenor have poured in upon all the departments from every part of the country. Several manufacturers who have received from the departments in the ordinary course of business blank proposals covering material for which bids are to be opened in the near future have returned them with a request that a clause be inserted nullifying the contract in the event of the passage of the Eight-Hour bill. Thus the mere pendency of the bill, in view of its passage by the House and the favorable report made upon it by the Senate Committee, has already begun to embarrass the departments, furnishing a foretaste of what would follow should the bill become a law.

### Protests of Electric Companies.

Recent protests from prominent manufacturing concerns in the metal and allied trades dwell with special emphasis upon the embarrassment that would be suffered by the Government should this bill become a law, and the positive statement is made by many leading firms that in such an event they will take no more Government contracts under any circumstances. The Thresher Electric Company of Dayton, Ohio, manufacturers of electric machinery, who now have important contracts for apparatus used on United States battle ships, have addressed the following letter to Chairman McComas of the Senate committee:

"We cannot enter too strong a protest against the enactment of this law, and urgently and earnestly bespeak on behalf of yourself and your committee such action as will make impossible the hardship and disaster that would immediately follow. Such legislation by the Federal Government abridges the liberty of independent action of manufacturers guaranteed under our Constitution. It makes it impossible for manufacturers competing for commercial work to undertake Government contracts, as it would be impossible to operate part of a factory on one class of work and the balance on another and it would be impossible to take advantage of such economies in manufacture as would be obtained by standardization of parts and the manufacture of same in quantities. In our own business it would work a very great hardship and loss, as we have just completed at great expense of time and labor a complete line of electrical apparatus especially adapted for use on United States battle ships. There is no sufficient amount of this business alone to operate a factory, and with a provision of this kind it would be impossible to carry it on simultaneously with other contracts that we might have on hand.

"Moreover, as these manufactured products do not become the property of the Government until they are tested, delivered and paid for, we consider it beyond the province of the Federal Government to step in and attempt to regulate business policy in the factories of this country. Such a law would put our commercial interests back many years in their progress and would entail disaster and loss that would work greater hardships than any supposed benefit to be obtained from such law. It would so increase the cost to the Government of such materials as they are obliged to purchase as to greatly increase the appropriations necessary for carrying on the work which has been undertaken and greatly hamper the building up of our navy, which the commercial interests and the proud position we now occupy among the nations of the world demand."

The Standard Underground Cable Company of Pittsburgh, Pa., in a letter to Senator Quay, state the case very strongly, as follows.

"We feel that this is, or would be, a wholly unwarranted interference with the manufacturing industries of the country, as well as with the laborer himself, who might, and in nine cases out of ten would, prefer to work longer and earn more money, and that the bill is iniquitous in every particular and should be defeated. We take contracts from the United States Government at various times for insulated wires and cables, but if such a bill is passed we should simply have to cease doing that business, as we could not manufacture for the Government on an eight-hour basis and continue our commercial manufacture for the rest of the country on a ten-hour basis, and it is absolutely impracticable for us to go on the eight-hour basis in our business. There is the very practical difficulty of obtaining a sufficient force to run two shifts of eight hours each, and under normal conditions of business there would be not enough work to require two shifts right along. This would result in irregularity of employment, with great hardship to many of the employees. In our processes of manufacture it would be simply impossible to separate Government contracts from general work in process of manufacture."

### The Jones & Laughlin Steel Company.

The Jones & Laughlin Steel Company of Pittsburgh, Pa., have also addressed Senator Quay, as follows:



"We believe that the enactment into a law of House Bill No. 3076, limiting the hours of daily services of laborers and mechanics employed upon work done for the United States, &c., would have a baneful effect upon the people of this country and would be especially injurious to the workman, whose natural and legal rights would thereby be curtailed and restricted. The impracticability of the proposed system of working in establishments manufacturing for the Government and the public will occur to you. Natural laws will adjust the working hours to the best advantage for all, as they have done in the past. Regarding this bill as most vicious in its character, we respectfully protest against its enactment."

#### Position of Subcontractors.

Some of the practical difficulties to be encountered by subcontractors under the proposed law are set forth in a communication addressed to the Senate committee by Kenney & Co. of Scottdale, Pa., manufacturers of engines, boilers, coal mine and coke oven machinery, as follows:

"We, as subcontractors, will come steadily in contact with this bill, and it will create no end of confusion in our factories and foundries from the fact that one gang will be forced to work on the eight-hour system on Government work, while in the same factory we will have another gang working on the ten-hour system. This can positively lead to no other general result than the beginning of agitation of the eight-hour system throughout our factories.

"We frankly state that should this eight-hour phase become a law it is merely the first stepping stone to spread the eight-hour system broadcast throughout the manufacturers in general, hence we appeal to you to use every endeavor to keep this bill from finding its way upon the statute books. That the eight-hour law would be ruinous to the country in general is established by the fact that we cannot at the present get skilled labor to run our factory ten hours to its full capacity, owing to the scarcity of men; and should the eight-hour law be forced upon us, cutting off one-fifth of the day, it would mean an increase of our working force to equalize the loss of time, and we are at a loss to understand where we could get men and labor enough to meet this increase.

"Again, an eight-hour system in a foundry would be ruinous, as nothing could be accomplished therein from the mere fact that the manufacturer is now compelled to put the blast on at 3 o'clock on the ten-hour basis. On the eight-hour basis no molding could be accomplished in the afternoon, and nothing would result from the afternoon's work but merely the running of the blast. As stated before, we are now continually running short on help, and an eight-hour basis would materially reduce the output of our factory to such an extent that it would be useless to attempt to operate at a profit."

W. L. C.

#### Jeanesville Iron Works Company.

On the Lehigh Valley Railroad, at Hazleton, Pa., one of the largest pump works in that section of the country is being built by the Jeanesville Iron Works Company, to replace the present plant which is located over a mine at Jeanesville, a few miles away. The plant is being constructed of steel and concrete, the rock for the latter being quarried from the site and crushed by a crushing plant erected on the premises, and the excavation so made will be used as a reservoir for the fire extinguisher system.

The main building will be 106 x 538 feet, divided into machine shop, foundry and casting cleaning departments, and equipped with five electric traveling cranes of from 5 to 20 tons capacity, running on girders throughout its entire length. The building will be heated by the blower system, and over the central portion will be a large pavilion, rising to the height of 77 feet, which will contain a 30,000-gallon water supply. The other buildings will be heated by direct steam radiation, and comprise a pattern shop, 50 x 74 feet, two

stories; three-story and basement pattern storage building, 50 x 202 feet; boiler and engine house, 47 x 87 feet, and a three-story office building, 60 x 65 feet, the first floor being used for general offices and the second for drafting rooms.

The equipment throughout will be most modern, including three cupolas in the foundry. There will be two 220 horse-power water tube boilers installed, with provision for a third, operated by induced draft system. The machinery will be electrically driven, 26 variations of speed, or 600 per cent. total variation, being obtainable on each machine when so desired by means of multivoltage system of speed regulation. The power for the electric motors and lighting will be supplied by De Laval steam turbines of 300 horse-power, each direct connected to a pair of 100-kw. generators.

The entire work is being erected from plans of Ballinger & Perrott of Philadelphia, engineers and contractors, who have associated for the electric equipment with Dodge & Day, mechanical and electrical engineers. Work on the plant is being pushed as speedily as possible, with the view to completing it in August.

#### The Outlook in the Manufacturing Industries.

James J. Hill, president of the Great Northern Railway, is quoted in the New York *Herald* to the following effect on the industrial situation. However much many manufacturers may differ from him on some of the salient points, there is food for reflection in the interview:

The truth is that this country is losing ground in a manufacturing way and will do very well even to her own markets. It is a wrong impression that we are sweeping all competitors aside. They are sweeping us aside, and why? Because of the high cost of production here. And the high cost of production is due to the growth of labor unionism and the continued strife going on among the unions as well as between the men and their employers. We can't meet the prices of German and English manufacturers and pay the wages which the unions compel. So long as the tariff is maintained we may hold our own markets, but some day, perhaps, the people in the West—and they represent a majority of the population—will kick over, will demand that the tariff be lowered. This sentiment increases the further West one goes.

Germany is leading the world now and is making much swifter progress than this country or any other. England has dropped behind. Labor unions aided in killing her industrially. France is like a bee—always busy, always hustling. In France it is father and son, and so on. But Germany is the country that is forging ahead. Her laborers work very cheaply; they spend 66 hours in the factory each week where we spend but 44, and her mechanics are superior. In addition she has facilities for transporting her products from and to every part of the globe at very cheap rates. Before we can get out and compete with her in the markets of the world we must lower the cost of producing manufactured articles and must elevate the quality of our products.

We are coming to a grave industrial reverse. It is hard to tell just when it will come, but it is approaching. It may come next Presidential year, and the result of it will depend largely upon who is nominated for President. The fact that money was hard last fall was a check on the wild speculation in manufacturing securities, and, no doubt, postponed the reverse which is destined to overtake us. There seems to be too much confidence in the ability of the country to walk right ahead of all other countries in manufacturing. The country can do it, but not without trouble and not without changing its present course. It is indeed a grave crisis we are approaching, although few seem to appreciate it. A few years may see the closing of many factories and the throwing out of work of hundreds of thousands of men. We have been reaping the harvest and the reverse is coming. How quickly we recover from it will depend largely on who is at the head of the country when the break comes.

## Scotch Iron and Shipbuilding Notes.

### The Pig Iron Trade.

GLASGOW, January 23, 1903.—There has been no very large amount of business in the pig iron market since the year opened, but prices of warrants have firmed up generally. The principal dealings have been and are in Cleveland warrants. Cleveland iron of all sorts has stiffened under the advices from America and Germany. It is believed that Germany has sold pig iron so freely to the United States that it will soon have to buy pretty largely from England to make up its own consuming requirements. While I write Cleveland warrants are 47 shillings 6 pence, but makers are asking more for No. 3. For No. 4 foundry the quotation is 46 shillings 6 pence and for No. 1 iron 49 shillings 6 pence. Hematite iron has been more extensively bought of late and has steadied a bit, but the price is still low relatively to ordinary and cannot be very remunerative in view of the costs of ore and fuel. Middlesbrough hematite is 55 shillings 6 pence, Cumberland 58 shillings 6 pence to 60 shillings 6 pence and Scotch hematite 61 shillings. In Scotland the furnaces which were under repair are blowing in again, and there are 86 in blast as compared with 77 a year ago. Consumption is now in pretty full swing and rather more is coming in from Cleveland, though the difference in price is only about 6 shillings per ton. In the Glasgow warrant market there has been some buying on outside account, through London, but whether actuated from America or not is not known. There have been a good many inquiries here from your side since the holidays and some orders, but not so much business as talk. The low German prices seem to have attracted the American orders so far. Scotch makers are firm in their quotations. The shipments of Scotch this year are so far about 5000 tons ahead of last year.

### Shipbuilding.

Although shipbuilding generally is not better, nor likely to be for some time to come, some considerable orders for liners have been placed lately which will keep a few of the yards busy. Harland & Wolff, besides the heavy work they had on hand from last year, are to build six new 10,000 tonners for the Morgan combine. The Union-Castle Line have ordered three new mail boats, to be built respectively by the Fairfield Shipbuilding & Engineering Company, Barclay, Curle & Co. and Harland & Wolff. The Union Steamship Company of New Zealand have ordered a large boat from William Denny & Bros., and there are a few other orders of the kind besides the two monster Cunarders. Shipbuilding steel and malleable iron are quiet, but structural steel is in some demand, and makers of locomotives and machine tools are finding plenty of business. Pipe foundries are full of work, especially in heavy grades.

### The Movement of Coal.

There is still a great deal of coal going from both East and West Coast ports to the United States, and it is predicted that the shipments thither this month will exceed those of last month, when a total of 161,000 tons was reached, bringing up the total for the year to 880,422 tons, an increase of 750,000 tons on 1901. There are many inquiries in the market for steamers to New York, Boston, Baltimore, &c., from both Clyde, Tyne, Humber, Cardiff, Swansea and Mersey, but whether these are for old orders or new sales can hardly be said. There has certainly not been the rush from your side that was expected on the suspension of the tariff dues on coal, and there is more difficulty in getting vessels.

### The Two Big Cunarders.

The Fairfield Shipbuilding & Engineering Company, Glasgow, have not, after all, got the order for one of the two new Cunarders. One is to be built by Vickers, Sons & Maxim of Barrow, the other by C. S. Swan & Hunter of Newcastle-on-Tyne. The vessels will be 760 feet long and of 32,000 tons displacement, and in order to insure that they will steam from port to port at the speed of 25 knots they will be quite full of machinery. There will be three screws to each ship and each of these

screws will be driven by an entirely separate engine capable of developing 20,000 horse-power, so that the three engines will together be equal to the enormous total of 60,000 horse-power. The quadruple expansion system will be adopted, with probably 18 cylinders in the main propelling engines. These will be the first ships fitted with three screws for the Atlantic merchant service. The United States Navy were among the first to try the three screws in cruisers, and France and Germany have put three screws, with separate engines, into some of their ships, not so much because of the great power as to enable the ships to run at cruising speed with one engine only. With the Cunarders it would have been impossible to have secured the desired power and speed out of two screws. All the shafting and heavy steel work for the Vickers vessel will be supplied by William Beardmore & Co., Glasgow.

Great responsibility is involved in constructing these high speed ships, both from the financial, structural and machinery standpoints; but with German firms entering into contracts for 23 and 24 knot ships it would be odd if British firms would not accept the task of building 25 and even 26 knot ships. There is, I believe, no stipulation that unless the ships attain their speed they will not be accepted, but there will be a penalty of a certain sum for each fraction of a mile below the required speed. A maximum price has been fixed of £1,250,000 for each ship, but payment will be according to the actual cost, with a percentage of profit added. The time for building each ship is from 25 to 27 months, with a month extra for the series of trials.

### The Philadelphia Foundrymen's Association.

The regular one hundred and twenty-fifth meeting of the Philadelphia Foundrymen's Association was held Wednesday evening, February 4, at the Manufacturers' Club, 1409 Walnut street, in that city. The association was called to order at the usual hour, the president, Thomas Devlin, occupying the chair. The minutes of the previous meeting were dispensed with in the usual manner. The treasurer reported a balance of \$2016.42 on hand, with no outstanding accounts. Applications for membership were received from Frank Samuel, iron and steel commission merchant, 202 Harrison Building, Philadelphia, and James S. Stirling, vice commissioner, National Founders' Association, and vice-president of the Philadelphia Foundrymen's Association, as the representative of the Harlan & Hollingsworth Company, Wilmington, Del., with which company he recently severed his connection. Both applications being favorably acted upon, they were elected to membership. Resolutions upon the death of Geo. Van Tyne, late member of the association, were read and ordered spread upon the minutes of the association.

The paper of the evening was on the subject, "Cash Discounts, Their Use and Abuse," by T. James Fernley, Secretary of the Philadelphia Hardware Merchants' and Manufacturers' Association and of the National Hardware Association. Mr. Fernley in a short address explained the various effects of a cash discount and its discontinuance by various large concerns. In the discussion which followed it was shown that the establishment of a regular cash discount would be difficult in the general foundry trade because of the many different conditions which governed that business. Castings were customarily sold thirty days net, but even then some concerns would persist in deducting a discount, even after the date due, which was considered unfair, particularly when no such agreement had been entered into. No discounts were as a rule given on purchases of foundry raw materials and supplies, therefore it was the general opinion that no discounts could be allowed to their customers.

The topic for discussion for this meeting was "The Effect of Foreign Pig Irons in Mixtures, in Comparison with Domestic Irons." The experience of many of those present varied; some had used only small quantities of foreign iron in their mix and had obtained very good results, others had the contrary experience. With those whose practice it has been to mix their irons by chemi-



cal analysis very satisfactory results were obtained. One or two local plants have been running for some time on entirely foreign iron on this basis with complete success. Those, however, who have tried to mix some grades of foreign with our local or nearby irons have met with varying success when the question of analysis was not considered. Occasionally good results were obtained, but oftener they were bad. German iron, it was said, approached nearer the composition of local irons than did the English or Scotch, and therefore gave the least trouble. Chemical analysis of the various foreign irons, which often varied in composition even in different ends of a car, was suggested and advocated as the only remedy and method of producing good results in the use of these irons. For steel making this was particularly necessary, as in some brands varying percentages of arsenic, copper, titanium and other elements have been found. At the close of the discussion the meeting adjourned and the usual luncheon was served on the roof garden of the club.

### New Publications.

**The Sea Coast: 1, Destruction; 2, Littoral Drift; 3, Protection.** By W. H. Wheeler, M. Inst. C. E., author of "The Drainage of Fens and Lowlands by Gravitation and Steam Power" and "Tidal Rivers." With numerous illustrations. Publishers: Longmans, Green & Co., London, New York and Bombay. Pages 361. Price, \$4.50.

The purpose of this work is to record the results of the experience obtained in the protection of the sea coast from erosion and littoral drift. Great injury is also done during gales and high tides to sea walls and other works which have been constructed for the protection of lands adjacent to the coast. The author states in his preface that in no branch of engineering, perhaps, is there so little unanimity of opinion, or in which so much money is from time to time expended on works that are useless. Even in Holland, whose existence depends on the maintenance of its sea walls and defenses, the authorities are divided on most important questions, both of principle and practice, and consequently methods of protection which find favor in one part of the coast are condemned as costly and ineffectual by those who have charge of the defense of adjoining parts. Having had opportunities afforded him of becoming acquainted with the various means that have been pursued to prevent the destruction of beaches and the protection of sea walls and other defenses, he has incorporated in this book such information as to the varying geological and tidal conditions attaching to sea coasts and the result of protective works carried out under different degrees of exposure as may be of service to those having charge of protective works or interested in the destruction and preservation of land bordering on the sea.

The methods for sea coast protection which are described in this volume are, of course, those which have been followed in Europe, but their character is such as to make them applicable to similar work which may be required in this country. The illustrations show the methods which have been employed, while thoroughly detailed descriptions are given of how the work has been conducted. Those who are interested in this subject will undoubtedly find the book of great practical value.

**Production and Properties of Zinc.** By Walter Renton Ingalls. Published by the *Engineering and Mining Journal*.

The manufacture of zinc has become one of our important metallurgical industries, and Mr. Ingalls has done a good work in collecting in a convenient volume the scattered commercial and technical data relating to it. He has watched developments closely for years and is exceedingly well qualified to perform the service. Mr. Ingalls deals intelligently and fully with economic conditions, sketches the history of the zinc in-

dustry in different countries and indicates the sources of ore and fuel supply. There are brief chapters on the uses and properties of the metal and its products, on the mechanical concentration of zinc ores and the sampling of the same. It does not, however, take up the metallurgy of zinc proper.

**Lead Smelting.** By Malvern Wells Iles. Published by John Wiley & Sons. Price, \$2.50.

Dr. Iles was for many years connected with the Globe Works at Denver, upon which he impressed his personality until the plant was known as one of the most progressive and efficient in the country. Dr. Iles has been a leading writer in the branch of metallurgy which he has made his specialty, so that a volume from his pen is naturally studied with interest and read with confidence. The little book justifies fully the expectations raised of it. We have been much struck with the simple and direct manner in which lead smelting is treated, and the whole breathes the spirit of the trained observer who has been in intimate touch with the practice for years. We commend it without reserve to all who are about to become or who are interested in lead smelting.

**Atlas of Drawings Relating to the Manufacture of Pig Iron.** By Michel Pavloff, Ekaterinoslav, Russia.

Professor Pavloff of the School of Mines at Ekaterinoslav, Russia, has published an album of drawings, taken from many sources, of appliances and plant bearing on pig iron manufacture. It includes roasting kilns, including one designed by the author for the Klimkovsky works in the Oural, a large number of sections of blast furnaces in different countries, details of hearth construction, of bosh plates, charging apparatus, boilers, blowing engines, stoves, ladles, &c. There are in all 127 plates, many of them of American origin.

### Decision in Noxious Gases Case.

NIAGARA FALLS, N. Y., February 7, 1903.—In the Supreme Court Justice White has rendered a decision in the case of Mrs. Mary Wattengel against the Acker Process Company of Niagara Falls. It is practically in the company's favor. When the suit was instituted the plaintiff asked damages of 4000, and had an injunction restraining the company from the further operation of their plant on Third street, Niagara Falls. The decision awards damages of \$1000, but denies an injunction. Previous to the suit the Acker Company had expressed a willingness to pay damages for any property which they might be shown they had injured during the experimental stages of their plant and process. The court finds that during the construction of the plant and prior to November 10, a nuisance did exist, that noxious gases escaped, but since that time, decides the court, the company have voluntarily and by improved and scientific methods successfully endeavored to abolish the alleged nuisance. Since November 10 the court decides there has been no injury to surrounding property as a result of the operation of the works. In regard to the petition for an injunction, the court decides that to issue it would work more harm to the defendant company than good to the plaintiff.

Now that the court has ruled on the points at issue it is highly probable that other cases which have been commenced will be adjusted out of court. The decision is of extended interest. Cases having similar foundation of complaint exist in various parts of the country, and for this reason the decision in the Niagara case will have widespread importance. All of the electro-chemical industries of Niagara could not fail to be interested in the outcome of the Acker case. The decision has a value to the future of Niagara Falls, which is not likely to interfere or interrupt its constant advancement and growth. In the electro-chemical field there are numerous processes that do not operate exactly as planned at first, and it would work hardship in many directions if decisions of the courts had a tendency to kill instead of encourage the ambition which ultimately develops success.

# The Iron Age

New York, Thursday, February 12, 1903.

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RICHARD R. WILLIAMS,	- - - - -	HARDWARE EDITOR.
JOHN S. KING,	- - - - -	BUSINESS MANAGER.

## Bank Co-operation During a Crisis.

The requirement of the Clearing House Association that trust companies in the association shall gradually accumulate reserves till they amount to 10 per cent. of their deposits, with an ultimate 15 per cent. in contemplation, is important in itself, but it is especially important in view of the understanding that it is a part of a plan for more intimate co-operation of banks during a crisis. Leading members of the association believe that in the next emergency relief should not be afforded by the issue of Clearing House certificates, but by the pooling of all the cash held by members of the association. This would be a further advance in the co-operation of financial institutions for mutual protection and for the assistance of their customers, and an increased safeguard against panic.

The financial panics which inflicted enormous losses on this country and England in the first half or two-thirds of the nineteenth century were aggravated by the course of the banks, but no co-operation existed among them, and they were obliged to protect themselves. In a panic there is an exceptional need of credit. Merchants who cannot collect, or fear that they will not be able to collect, the money due them must borrow or see their own notes go to protest, though they are perfectly solvent. But the ability of the bank to respond to the demand of its customers is limited by the cash it has, and the bank itself finds it as difficult as its customers do to collect from its debtors, while its depositors not infrequently withdraw their funds, fearing that if they do not get currency while they can they may be unable to get it when it is absolutely necessary. Hoarding is a common incident of panics, and the bank finds its resources reduced at the moment when there is the greatest demand on them. The Bank of England, and particularly the New York banks in 1857, have been bitterly denounced for curtailing credits when credits were most essential, but it is probable that the banks pursued the only course that saved them from insolvency. They ruined many a solvent customer, but more would have been ruined had the banks themselves failed.

The need of additional currency in a panic has been met in England by the suspension of the Bank act, thereby allowing the Bank of England to increase its note circulation, and in this country by the voluntary action of associated banks in issuing Clearing House certificates, available in settlements between members. In England it has in almost every instance been sufficient to announce the suspension of the act; the disposition to hoard and the desperate efforts to get money instantly were abated by the knowledge that there would be more currency if needed; the need disappeared with the assurance that it could be met. In this country the Clearing House certificates have not only provided an emergency circulation, but they have enabled banks to let their customers have cash, and to extend credit to all their customers who were solvent and had good assets to offer. It was the most appalling feature of the earlier panics that perfectly solvent merchants were ruined be-

cause they could get no money or credit instantly; their assets were undoubtedly good, but could not be turned into money at the moment. It is a pretty well established principle of modern banking that a solvent merchant and a solvent bank shall not be allowed to fail. One suspension precipitates another, and the area of disaster is immensely extended if solvent merchants and banks are allowed to fail. Intelligent self interest compels the banks to sustain each other, and to sustain each other's solvent customers.

The issue of Clearing House certificates has saved many a bank and enabled it to save its customers. The practice began in 1860, three years after the especially loud complaints that the New York banks ruined their customers to save themselves, and it was renewed on several occasions, notably in 1873, 1884, 1890 and in 1893, when the total issues were \$41,490,000, and the largest amount outstanding at one time was \$38,280,000. No one can realize how much this device has done to mitigate the disasters of panics who has not contrasted the history of the later with that of the earlier panics in the nineteenth century. It is now proposed that in the event of another emergency the co-operation of the Clearing House banks shall be far more intimate and extensive, and the entire cash reserves of the Clearing House banks shall be pooled and placed at the disposal of a committee for the general protection of all the members and their customers. Preliminary to such a measure the trust companies enjoying the privileges of the association will have to increase their reserves from \$6,000,000 or \$7,000,000 to \$40,000,000, probably in the end to \$60,000,000. While this will not avert business depression and even monetary stringency, it will render the business community almost secure against panics.

## Increasing Use of Heavy Wire.

Among the interesting developments of modern improved processes may be noted the greatly increased use of heavy wire or drawn rods. Rapid growth in this respect has been made in the past ten years, but it has been particularly rapid in the last two or three years. Heavy wire is now used almost exclusively in the production of carriage, stove and tire bolts, rivets, machine screws, &c., up to half an inch in diameter, while headway is being made toward taking in even larger sizes. Small rivets and bolts have of course been made from drawn stock for many years. It was not difficult to get the wire needed, and it was an easy matter to make a machine for cold heading light work. But it was long considered necessary to use heat in upsetting heads on bolts and rivets from  $\frac{3}{8}$  to 7-16 inch in diameter. Rolled rods were purchased for this purpose and they were usually delivered in comparatively short lengths. Two men were required to keep one machine in operation, one man heating the rods and the other feeding them by hand into the machine. Drawn wire of the same size was considerably dearer than the rolled rods and was not produced in large quantities.

The persistent efforts to cheapen the cost of production may be largely credited for the changes which have taken place in this industry. Heavier machines have been built for upsetting and heading, enabling larger sizes of bolts and rivets to be worked cold. This rendered feeding from a coil desirable. The increased demand for drawn rods caused them to be made in greater quantity and to be sold at a lower price, competing in cost with the rolled rod. The drawn stock, being in coils, enabled the machines to be fed automatically, so that a group of machines can be operated by one man.



Further, drawn rods are more accurate to gauge than rolled rods and are free from scale. Cold heading also avoids considerable outlay for a heating plant and fuel. Thus the daily production is greater, the quality of the work is better and the cost of manufacturing is lower. It is often desirable to have a bolt or a rivet made a few thousandths of an inch less than the standard size, to fit it for some special purpose. This can be done with ease by the use of drawn rods, but would be a matter of some difficulty with rolled stock, which would not only not be quite accurate, but would also be more expensive on account of the extra required for the special rolling. Bolt makers further say that with drawn rods there are comparatively few defective bolts, reducing waste to a minimum. They are therefore preferred even though the price should be a trifle higher than that of rolled rods. As the difference in price decreased the tendency to use drawn stock was greatly strengthened.

On some classes of work, even though the bolts are not very large, rolled rods are not likely to be supplanted. For instance, many bolts are used which do not require a perfect thread, such as track bolts. These bolts are now largely made with a rolled thread, and for this purpose a rolled rod, although not perfectly true to gauge, is satisfactory. Nor is there any special advantage in the accuracy of a drawn rod for making a bolt which must be forged hot. In another part of this issue will be found numerous extracts from letters received from bolt and rivet manufacturers who have been asked for their views on this subject.

### The Bloomington Law and Order League.

The city of Bloomington, Ill., has made, through its leading citizens, a proclamation which may serve admirably as a text for what it is our purpose to say concerning the duty which the representative men of communities similarly situated find confronting them in the present attitude of organized labor toward every social right and material interest.

At the beginning of the conditions which the citizens of Bloomington have found intolerable was in the great fire which destroyed it in the summer of 1900. The rebuilding of the city, which immediately followed, brought together at that point thousands of the floating labor of the building trades and with them the executives of the several branches of those trades. This established union rule firmly in the city and set a pace to which the leaders of other than the building trades were not slow to conform. Its natural advantages of location, emphasized by the enterprise of a Business Men's Association filling the function usually performed by a local Board of Trade, attracted a number of important manufacturing industries, and many more would have located there had it not come to be understood that Bloomington had become a stronghold of unionism, under the direction of short sighted and unreasonable men, who had no notion of promoting the interests of labor other than in brutally enforcing the inflexible rules of the unions regardless of consequences. In this respect the experience of Bloomington is probably not different from that of many towns and cities which organized labor regards as fortified centers. The unions claimed unlimited power, and such as they had they exercised without regard to private rights or the public interest. Says the declaration: "This despotism was visited indifferently upon the capitalist, the manufacturer, the merchant, the contractor, the farmer and wage earner, union and nonunion. Disobedience to their commands was followed by threats of sacrifice of capi-

tal, destruction of property, loss and ruin of business, social and business ostracism, loss of employment, abuse, persecution, intimidation and assault. These threats, to the extent of their power, were carried out." This sounds sensational, perhaps, but exactly the same might be said of the conditions existing in some hundreds of towns and cities in which manufacturing is an important factor in the equation of local prosperity.

Under the conditions described the development of Bloomington as a manufacturing center stopped short. Many concerns which had been considering locating there decided not to do so, and some already there will leave as soon as they can arrange to do so. In a word, the prosperity and progress of the city are gravely menaced, if not irreparably injured, "because a comparatively small number of the population have usurped arbitrary power and with insulting tyranny assume to exercise such power over the whole people. More than all else, the agitators and irresponsible officials of these labor unions have robbed individual citizens of the common rights guaranteed to them by the laws of the land."

A study of the situation made it evident that individual action was futile in opposing this form of highly organized despotism. Critically examined, the forces to be dealt with were found to be in no sense as formidable as they had appeared to be when measured by their capacity for unopposed mischief. The wage earners of the city engaged in the trades which admit of organization are relatively a small proportion of the population, and of these the proportion enrolled as union members is but a fraction of the total. The turbulent and lawless element is simply a very energetic and pestiferous minority, and while able to destroy any one who attempts to combat them single handed, would quickly find themselves powerless if the interests they seek to control and are willing to destroy were allied against them. When this fact was recognized it did not take long to form a Citizens' Alliance, composed of citizens of all parties and occupations "who believe that their manhood, their independence of character and their freedom of action within the law are threatened." The object of the alliance is to protect the rights of the members and, incidentally, those of all the people of Bloomington. They propose to see to it that every man who wants to work and for whom there is employment offered shall be protected against all comers in the enjoyment of that right, whether he be a member of a union or not. They will exhaust the resources of the law to suppress boycotting, persecution, intimidation and violence. They will not take sides in any labor dispute on the merits of the issues involved, but they will use every available means to prevent recourse on either side to unlawful measures of coercion, and to punish violence and crime in whatever form it develops. The theory is that if strikes cannot be won without boycotts, incendiarism, violence, threats of bodily injury and the usual accompaniments of a disagreement as to wages, hours of labor and the like, to begin them is contrary to public policy and the duty of the citizen is to do all in his power to protect the public interest. As a theory this is sound and indisputable. If the wage earner cannot cordially accept and support it, no other evidence is needed that the iron has entered his soul so deeply that it has unfitted him for citizenship in a republic.

The Bloomington declaration is too long, too diffuse and too argumentative to best serve the purpose of a warning to labor organizers that if they overstep the law they will have a body of citizens to deal with who will hold them rigidly account-

able. It is also incomplete in some respects and leaves unsaid a good many things which might properly find a place in such a document. As the Bloomington movement should be imitated wherever like conditions exist or are threatened, we offer for the consideration of those for whom the subject has interest the following as a form of declaration of principles for a Law and Order League which, with such modifications as may be necessary to meet local conditions, may be useful as a basis on which to crystallize public opinion in favor of protection for private and public rights:

The Law and Order League of ..... is organized for the purpose of discouraging all practices invented by unscrupulous labor leaders for the attainment of their ends, which are in violation of law or involve an infringement of individual or public rights.

It will not interfere in labor disputes, unless requested to furnish a board of mediation or arbitration. Its attitude toward labor is that which good citizenship and enlightened self interest demand that every man shall take. It is actively in sympathy with all efforts to better the condition of labor, and it does not believe that low wages, excessive hours or oppressive shop rules promote the public welfare.

It believes, however, that the tendency of labor organization under the class of leaders now chosen to represent the efforts of the wage earners to better their condition is to encourage the notion that the workman is superior to the law and that whatever is thought necessary to the attainment of the ends which the unions deem desirable may be done with impunity, if not with propriety, provided it is done in the name of labor. So long as this mischievous tendency is tolerated by the union membership it becomes the duty of every good citizen to do what he can to assist in the impartial enforcement of the law against all who violate it.

The Law and Order League of ..... hereby gives notice to whom it may concern:

That it will set in motion every available agency to detect and punish crime, violence or the invasion of any individual or public right by irresponsible bodies of men unknown to the law.

That it will hold the local authorities in their several spheres of duty rigidly accountable for the preservation of the peace and the apprehension of law breakers; will furnish from its own members a *posse comitatus* to assist them when necessary, and will through its own counsel aid in the collection of evidence and in seeing to it that courts and magistrates do their duty when offenders are brought before them.

That it is determined that every young man or woman within the limits of ....., who desires to learn a trade or qualify for self support by useful industry, shall have the privilege of doing so unmolested, without asking the consent of persons to whom he or she is under no obligation of duty or respect, and without paying any unauthorized collector of tribute for the right to do so.

That it is determined that every man or woman with opportunity to earn a living, whether by skilled or unskilled labor, shall have the right to do so without interference or molestation, whether in the membership of a union or not.

That it will rigidly investigate all cases of molestation, persecution, intimidation, violence or threats of violence of which it has knowledge or information, and promptly take such measures as are advised by counsel for the effective protection of the persons thus wronged.

That it is unalterably opposed to the form of criminal conspiracy known as the boycott, and will exhaust

every means at its command or which is afforded by law for the adequate punishment of all who take part in or are identified with such criminal conspiracies, whether actively or passively; holding that a tradesman, physician, lawyer or other person offering public services who refuses to trade with, attend or assist another because the person refused is under a boycott is accessory to the criminal conspiracy and is voluntarily *particeps criminis*.

That it will extend support and sympathy and, where necessary, legal aid and material assistance, to persons intimidated, persecuted or boycotted, and will do all that it can to enforce respect for law among all classes of the community.

Such an announcement made in good faith and backed by responsible names would give strike organizers something to think about. How the typical strike is conducted in many industries, especially those which operate public utilities, was forcibly illustrated a few days ago in Montreal. On the night of the 5th inst. the employees of the Montreal Street Railway Company held a meeting which lasted until midnight and which resulted in a decision to strike. Before the cheering which greeted this announcement had ceased a mob was formed which armed itself with such weapons and missiles as were available and hastened to a convenient corner. The first car of the company which came along was attacked, demolished with stones, rendered helpless and left to block the track, and the motorman and conductor were roughly handled and only saved their lives by escaping from their persecutors. This car was out on the line when the strike was declared; neither the company nor the crew could have had notice that they were in commission of the unpardonable sin of disobeying the mandate of the union. Obviously the time has come for a vigorous assertion by the majority of well ordered and law abiding communities that lawlessness and crime on the part of the minority must cease, and that this is not opposition to the proper and reasonable demands of organized labor but a purposeful and formidable protest against the crimes committed in the name of labor.

## CORRESPONDENCE.

### Peculiar Cracking of Bronze Tuyeres.

*To the Editor:* Recently I had quite a troublesome experience with tuyeres cracking in a most unaccountable manner. Almost every day we would find water entering the furnace, and on locating it and removing the defective tuyere a crack would be seen about 2 inches from the nose, extending from 3 to 4 inches around the circumference. The tuyere looked as if it had buckled at this point slightly, and the fracture of the crack was bright and crystalline. The tuyeres were not very old, having been in service four months, and were cast by a prominent maker. No solution of the trouble could be found. Chemical examination showed the right proportion of metals in the alloy, arsenic, phosphorus and iron were present only in traces, and the alloy was free from oxides. The furnace was running on basic pig iron and carrying 76 per cent. limestone, with a manganiferous limonite ore mixture with traces of zinc. The water pressure on the tuyeres was good, being 22 pounds, and the circulation was perfect: the water was soft and clear, so that trouble from incrustations could not have caused the cracking. The furnace was driving from 275 to 340 tons of ore daily and everything appeared normal. By replacing the cracked tuyeres by fresh ones from the maker the trouble disappeared. They were 5½ inches and the blast temperature averaged 1090 degrees. Possibly some of the readers of *The Iron Age* can explain the mystery.

R. BOLLING,  
Superintendent Victoria Furnace.

GOSHEN, VA.



## The Niagara Falls Power Company Fire.

NIAGARA FALLS, N. Y., February 5, 1903.—It is likely that it will be a very long time until the remarkable fire accident on Thursday, January 29, at the plant of the Niagara Falls Power Company will cease to be a subject of wonder among the electrical engineers of the country. The shutting off of a 50,000 electrical horse-power service is not an every day occurrence, while its resumption in less than 24 hours is a credit to the men who did the repair work and to the controlling company. Too much cannot be said of the very able manner in which the engineers of the Niagara Falls Power Company met the emergency. The destruction of the cables had made it impossible to deliver the 50,000 electrical horse-power of the generating station until cable connections were resumed. The fire burned until midnight, and when it was extinguished not an instant was lost in commencing the repair work.

A feature that caused delay was the interruption of the light service as a result of the burning of the wires, but several large headlights were at hand, and by the illumination so obtained the work of reconstruction began. A most unfortunate incident was the cutting off of all telephone connections, the cable having burned, although the telephone wires had been placed so as, it was thought, to be safe in case of accident. The interruption of the telephone service made it impossible for the officials of the company to call their men back to work over the line. It was like starting a man to do a tremendous task with his hands tied, so far as these two modern conveniences of electric light and the telephone were concerned. In the emergency several carriages were quickly obtained from a livery, and in these messengers raced around throughout the night calling in men and securing things the men at work needed. The fire attracted a large crowd, and among the people who gathered were many laborers of the tunnel district. Many of these were engaged and set to work, so that by 1 o'clock at least 200 men were on the job, and the work of replacing the burned cables was well under way. It was fortunate, indeed, that the Niagara Falls Power Company had a bountiful supply of cable on hand. Under the direction of Superintendent Barton the large force worked as methodically as an army. By 7 o'clock Friday morning all the cables between the generating station and the transformer station required for the 2200-volt connections for the long distance service had been replaced.

To conquer the fire in the transformer station it had been necessary for the firemen to throw a great deal of water there. In this way the air blast transformers became wet. For this reason it was found necessary to substitute for them a number of the 1875-kw. oil insulated transformers. These transformers had been in use at 11,000 volts, and to meet the necessities of long distance transmission or service the high tension connections had to be changed to deliver 22,000 volts. The water thrown into the transformer station also wet the 22,000-volt bus bars and wiring between the air blast transformers and the transmission lines. It was thought best not to attempt to use it, for this would delay its permanent repair, and so an entirely new installation of 22,000-volt wiring, including bus bars, connections from transformers and connections to the transmission lines was designed and installed complete, ready for operation, by Friday afternoon at 1 o'clock.

When current was at this time put on the 22,000-volt transformers, short circuits occurred in the terminals of three of the transformers. This trouble was caused by water collecting on the marble terminal boards immediately around the terminals and under the oil. To remedy this it was necessary to draw off some of the oil, clean all the terminals, and refill with clean oil. This work caused a delay of about four hours, and it was about 5 o'clock when the long distance service to Buffalo was resumed. The principal local tenants of the Niagara Falls Power Company were taken back at intervals from 11.30 a. m. until 3 p. m. of the same day.

On the night of the fire, and immediately after, it was thought that the fire might have originated on the bridge between the generating station and the transformer station, but in connection with the later theory that the lightning started a fire in the basement of the transformer station, it is explained that the draft from the transformer station across the bridge would naturally carry the flames into and over that structure.

In regard to the precautions taken by the Niagara Falls Power Company to prevent interruptions of their service, William B. Rankine, vice-president of the company, makes an important statement, in part as follows:

The importance of a suspension of a power supply which extinguishes the municipal and domestic lights in the cities of Buffalo, Lockport, the Tonawandas and Niagara Falls, cripples 350 miles of street car service and shuts down over 150 manufacturing concerns, can be realized only from a natural experience. This experience was had during 19 hours, beginning on Thursday evening last, and was caused by an absolutely unavoidable occurrence.

It is of public as well as of private interest to give assurance that every precaution is taken by the Power Company to meet just such exigencies and to avoid their repetition. At this time it seems proper to make known to the citizens of Buffalo and of the Niagara frontier the provisions for securing continuous power supply now enforced by the Power Company, as well as the plans under construction for redoubling and trebling such security.

There are three circuits of conductors for the transmission of power from Niagara Falls to Buffalo, attached to two distinct transmission pole lines. These lines are inspected daily. Each of these circuits is composed of three cables and has a capacity of carrying the maximum load required by the aggregate users of power in the city of Buffalo, although this load is carried upon two of the circuits, leaving at least one of the circuits always in reserve.

The present Buffalo service is supplied from power house No. 1, and the company have on hand always spare parts of the hydraulic and electrical machinery ready for substitution at any time in the place of injured or worn parts. Reserve cables are on hand in quantity sufficient to replace at any time the cables required for transmitting current for Buffalo from the generators to the transformers. Reserve transformers are installed with a capacity of 50 per cent. in excess of the normal use required. At the time of the fire on Thursday night the company had in their storeroom sufficient reserve cable to replace all the burned cable which had been supplying the Buffalo circuits, and this reserve was exclusive of the additional cables on hand for construction purposes in power house No. 2. In the city of Buffalo a complete set of spare cables is laid in conduits from the terminal station where the power is received from Niagara, to every power, light and railway sub-station within the city limits.

When the company have finished power house No. 2, now nearing completion, and when early next year the Canadian Niagara Power Company have constructed their first installation of 50,000 horse-power, now well under way, these three power houses, each containing a complete installation of 50,000 horse-power, will be so connected that power customers, including the city of Buffalo, will have the protection of three distinct sources of supply, and a recurrence of the recent suspension from the same cause would be impossible, unless three separate bolts of lightning simultaneously should strike all the three separate power houses of the allied companies. It is proposed also, as an additional reserve protection for Buffalo, to construct a transmission circuit from the Canadian power house on the Canadian side to Fort Erie, where a crossing will be made into Buffalo, thus giving four separate circuits for the delivery of current to Buffalo consumers, one upon the Canadian side and three upon the American side. It may be said safely that within a year there will be no steam or water power station in the world with such ample reserve provision for the production of a continuous power supply.



## The Lovering Drawback Bill.

WASHINGTON, D. C., February 9, 1903.—As the result of a conference between Representative Lovering, author of the pending drawback bill, and Chairman Payne of the Ways and Means Committee, it has been decided that this measure shall be called up in committee on the 11th inst. and voted upon. This decision has been brought about largely through the efforts of the Committee of Manufacturers, who have insisted that the question at issue was of such paramount importance to the export trade of the country that it should not be pigeon holed in committee, but that a vote should be had at the present session.

Whether the bill is favorably acted upon at the present session or not, a great stride has been taken in the development of more liberal policy in the future. When the first hearing on the bill was held it is fair to say that not a member of the Ways and Means Committee favored the proposition, chiefly, however, for the reason that they did not comprehend its various features, although it had been pending in the House for a considerable length of time. The members of the committee have since given the subject a good deal of study and the measure is coming to be looked upon as a non-partisan proposition which is not opposed either to the principles of high protection or those of so-called tariff reform.

The opponents of the Lovering bill appear to be confined chiefly to a few Government officials, who seem to fear that their labors would be somewhat increased should the measure become a law. Secretary Shaw's indorsement of the bill and his willingness to go as far as the adoption of the French drawback system were stated in these dispatches last week. Certain of his subordinates appear to be disposed to take issue with the Secretary and it remains to be seen which of these influences will have the greatest effect upon the Ways and Means Committee.

An argument against the bill prepared by a subordinate Treasury official has been examined by the Ways and Means Committee with a great deal of interest, chiefly because it discloses an entire lack of knowledge concerning commercial methods and the conditions encountered in the export trade. In the statement referred to it is contended that if the Lovering bill became a law a manufacturer in this country would be able to import a certain quantity of dutiable foreign material and sell it in the American market on a free trade basis by merely exporting a similar quantity of domestic material in a manufactured form, receiving back the duty paid on the imported material, thus driving competitors out of the market.

A concrete illustration showing the absurdity of this contention might be given as follows: A manufacturer imports from England a ton of pig iron costing \$16, f.o.b. New York, and paying \$4 duty, the total cost being \$20. Purchasing a ton of domestic pig iron for \$20, he manufactures the same into articles for export and on shipment receives back the \$4 paid on the ton of imported iron. It is therefore contended, in the statements referred to, that this manufacturer could afford to sell his ton of imported pig iron for \$16 in competition with domestic pig iron worth \$20. Of course, the fallacy of this argument lies in the fact that when the manufacturer exported his ton of domestic pig iron in the form of finished products he would be obliged to sell it abroad on a free trade basis, or for \$16, because he would be obliged to compete with foreign manufacturers paying only \$16 for their pig iron. He would, therefore, have to add to the price of the ton of foreign pig iron left on his hands in the transaction just \$4 to make himself whole.

This is, of course, very elementary, but it is a somewhat surprising fact that the absurd contention here described has been set forth in an official statement prepared by a deputy collector at New York and forwarded to Chairman Payne as the official view of the Collector at New York. It hardly need be said that the members

of the committee have not been misled by such arguments, especially as they are diametrically opposed to the statements made by Secretary Shaw. W. L. C.

## Notes from Mexico.

### Shipments to Mexico.

DURANGO, February 5, 1903.—Manufacturers and exporters in foreign countries who send merchandise to Mexico will no doubt be grateful for trustworthy and explicit information relative to custom house regulations, brokerage charges, freight classifications, &c. The Mexican Central Railway Company, Limited, have just published a very helpful brochure, entitled, "How to Ship to Mexico," which gives this information, and a great deal more "in a nutshell." A copy can be obtained from any of the company's representatives. W. C. Carson, 52 Broadway, New York, is their Eastern agent in the United States.

### Stoves and High Priced Fuel.

Makers of cooking apparatus for other kinds of fuel than coal might well take steps at the present time to actively push the sale of their manufactures in the larger cities of Mexico, in many of which there has been for some time, and is to-day, a great scarcity of the fuel generally used in Mexican kitchens. This fuel is charcoal, which is brought into the cities upon the backs of pack animals, and so peddled from house to house. It is used in brick stoves, or in *braseros*, the latter being a small, portable tin or sheet iron furnace. Charcoal has increased in price more than 100 per cent. within a few weeks in the City of Mexico. In Durango also it is scarce and dear. Through inadequate transportation facilities, or a scarcity of supply, similar conditions with respect to this fuel for cooking purposes occur periodically. Makers of gas, oil, vapor and electric cook stoves ought to take advantage of these conditions and exert themselves to make the merits of their specialties known here more clearly than they are. Stoves of different kinds can be found in most Mexican cities. The samples in stock, however, are an unknown quantity to the average native, who might become a purchaser if their good qualities were properly presented to him. What is required is a vigorous campaign of instruction with practical demonstration of the advantages possessed by cooking apparatus of United States make burning a cheaper and better fuel than charcoal. If this were properly done the result would without doubt be profitable to those who undertook the experiment.

The Waters-Pierce Oil Company are pushing the sale of an oil burning heater with some success, but cooking stoves, whether using gas, gasoline, or other combustible product, are practically unknown, notwithstanding the great want which their use would supply. The most modern stoves of the different classes, having the best safeguards against accident, alone should be proffered. Much prejudice will have to be overcome before a general demand can be created for the best modern cook stoves. Accidents will increase the difficulty incidental to making them popular.

### Industrial Notes.

A concession has been granted by the Government to Isaac M. Hutchison, "or the company which he may organize," to establish a factory in Mexico for the manufacture of freight and passenger cars. According to the provisions of the franchise, work must be begun upon the factory within a year, and it must be finished within three years. At least \$100,000 capital must be invested in the enterprise. A guarantee deposit of \$10,000 is one of the preliminary requirements of the concession.

The Minister of Finance has fixed the rate of exchange to apply to import duties during the month of February at 247¼ per cent.

Mrs. Agustin Hoth, widow of the late Agustin Hoth, head of the hardware concern bearing the name G. Lohse & Co., of the City of Mexico, has appointed Señor Alejandro J. del Rio to represent her interests in the business.

Great Britain in 1902 exported to Mexico 58,006 tons of railway iron and steel, against 7683 tons of the same products in 1901; and of galvanized sheet iron, 1898 tons, against 5242 tons in 1901.

The Mexican Central Railway Company have placed with the American Locomotive Company an order for 35 passenger and freight locomotives for early delivery.

Mexico's special commissioners, who left the country some months ago to drum up trade in Central and South American countries, have arrived in Rio Janeiro, where they met with an enthusiastic reception.

According to a Mexico City daily newspaper, the number of fundries is increasing in the large cities. The same paper adds: "The manufacture of domestic hardware is also increasing in a very notable degree, such as castings, large and small, valves, nails, spikes, &c." Cement of domestic manufacture is also meeting with an increased sale.

Henry Brown, a Pennsylvania coal operator, with a party of Pittsburgh capitalists, has recently been visiting the City of Mexico.

James B. Oliver, president of the Oliver Iron & Steel Company of Pittsburgh, is expected to arrive in the national capital in a few days.

An increased demand for machinery is reported. Supply houses are busy and are placing liberal orders for stock.

J. J. D.

### The Warwick Iron & Steel Company.

The directors of the Warwick Iron & Steel Company, whose blast furnaces are at Pottstown, Pa., have submitted their annual report to the stockholders. This report of general interest as it shows how the scarcity of fuel has interfered with the satisfactory operation of blast furnaces. The directors say that 1902 has been most disappointing, thus confirming the reports which have frequently been published the past six months regarding the hampering of furnace operations by the lack of fuel. We take the following statement from the report:

The product of pig iron for the year 1902 shows a total of 147,118 tons, divided as follows:

No. 1 furnace.....	Tons. 31,595
No. 2 furnace.....	115,519

No. 1 furnace was blown out for repairs March 6, 1902, after being in continuous operation for 272 weeks, and producing 306,290 tons. This product is an exceptional record for an Eastern furnace of the size of our No. 1 furnace.

The furnace was repaired at an expense of \$33,829.48, and blown in May 28, 1902. We were obliged to bank it September 24, owing to continuance of anthracite strike and the inability to obtain sufficient supply of coke. Operations were not resumed until November 11. Stoppages for shorter periods (for the same reason) were experienced previously, so that the total product since date of blowing in to January 1, 1903, aggregates only 13,073 tons.

The operations of No. 2 furnace were seriously interfered with and its successful operation threatened by repeated stoppages, owing to the congested freight conditions and the inability to secure regular supplies of fuel. During the first half of the year the difficulty was chiefly due to the failure of railroad companies to furnish transportation, the fuel at ovens and mines apparently being in abundant supply; but the trouble during the last six months is directly traceable to the long continued coal strike. Numerous long stoppages were experienced, materially curtailing product.

It is estimated that our total loss of product from causes absolutely beyond our control, and due to reasons entirely independent of any defects in the plant itself, approximates 20,000 tons. Cost of manufacture necessarily increased under these conditions, being due solely to the increased cost of fuel, repeated stoppages and decreased tonnage.

Instead of being one of the most prosperous years in the history of the company, 1902 has been most disap-

pointing. It is difficult to estimate, in figures, the wide reaching effect of the anthracite coal strike and the losses consequent thereon.

Contracts had been made for a fuel supply of coke for 1902. Sales of iron were made, based upon these contracts. Contracts for iron are binding, so far as the seller is concerned, especially when market values advance. This does not seem to apply to coke contracts, the shippers taking advantages of the clause in all contracts relating to car supply. The stoppage of the anthracite mines threw additional demands upon bituminous coal railroads, as well as upon bituminous mines and coke ovens.

The result was to seriously hamper transportation and still further decrease the car supply, all these causes operating to advance values. Notwithstanding our willingness to pay most exorbitant prices for coke to keep our furnaces in operation, it was found impossible to obtain a sufficient supply.

The inability to operate our furnaces continuously rendered it impossible to fill orders for iron, which had accumulated while No. 1 furnace was undergoing repairs. As a consequence orders taken at the then current prices, based upon low prices for fuel, remained unfilled until the costs of manufacture increased to such an extent that the profits of the company have been reduced much below what they would have been had there been no complications in the mining regions.

For the month of December, 1901, our total iron product was 10,572 tons, while for December, 1902, it was 14,947 tons. During December, 1902, our No. 2 furnace was run on foundry grades of iron for two weeks or more, thus enabling us to make a comparison with our No. 1 furnace, so far as costs are concerned, with both furnaces making approximately iron of the same analysis. There was no difficulty experienced, and only the usual difference was found between the cost of foundry iron (as compared with mill grades) that our practice for years past had demonstrated to exist in our No. 1 furnace. As compared with our No. 1 furnace, the cost of foundry iron at No. 2 showed a difference of about 75 cents per ton in favor of the latter.

There would seem to be no good reason why the different grades of iron cannot be made just as efficiently in the large furnace as in the small one, and at considerably less cost per ton.

Additional facilities and equipment have been required to permit of stocking larger quantities of material for winter use and the handling of same.

On December 1, 1902, we had in stock piles 117,827.02 tons of ore. Our consumption of ore during December was 27,220.08 tons, thus showing that the stock room provided is sufficient to afford storage for over four months' supply of ore for both furnaces, running at the rate of 15,000 tons of iron per month, or the originally estimated capacity of both stacks.

The unloading of ore from cars in the winter has always been expensive. There is little or no doubt that the saving effected would, in the end, pay a large interest on expenditures for further extension of trestles, to obviate the necessity of unloading from cars any ore during the winter months except the local supplies.

Of course, the stocking of large tonnages of ores and fuel calls for a large working or cash capital. When it is necessary to handle large tonnages of raw material in a limited time the substitution of machinery for manual labor becomes a necessity. This infers the accumulation of ores during the summer and fall in huge piles, so that they can be handled during the freezing weather with the minimum amount of labor and the least delay on account of rain, sleet, snow and cold weather.

Our experience during 1902, with respect to the delays of transportation, would also dictate carrying large stocks of coke. Our location provides plenty of room for stocking both ores and coke, the only thing needful being further extension of trestles and tracks and the necessary working capital.

The annexed balance sheet and statement exhibit the conditions as of December 31, and the profits for the year 1902:



Assets.	
Real estate account: No. 1 furnace, including machinery, land (34 acres), equipments, sidings, &c.	\$753,238.89
Construction account: Cost of No. 2 furnace, machinery and equipment.....	868,931.08
New construction account: Dwelling houses, new boiler, ore trestles and account new casting table No. 1 furnace, &c.....	57,808.71
Yarnall farm (114 acres).....	10,013.06
La Rue Mining Company, payment on one twentieth interest in Lake Ore property ("Mesaba Ore") .....	2,000.00
Pig iron on hand December 31, 1902, 336 tons at \$20 .....	6,720.00
General stock at furnace (duplicate parts of machinery, &c.).....	19,287.16
Bills receivable: Notes for pig iron not discounted.	22,091.31
Cash in bank.....	44,445.79
Iron making materials on hand—ore, coke, coal, &c.	452,815.33
Pottstown Iron Company, capital stock.....	4,323.63
Glasgow Iron Company, capital stock.....	1,830.00
Accounts collectable: Shipments of pig iron, November and December.....	175,317.28
Total.....	\$2,418,822.24
Liabilities.	
Capital stock.....	\$1,446,740.00
Bond account.....	300,000.00
Profit and loss account: Balance January 1, 1902.....	\$76,107.37
Less repairs to No. 1 furnace.....	33,829.48
	42,277.89
Pig iron account: Earnings for the year after deducting usual charges.....	\$95,525.35
Less interest on bonds and borrowed money.....	34,001.14
Net earnings after deducting all charges.....	\$61,524.21
Refrining account: Amount reserved for refrining furnaces .....	22,558.30
Bills payable.....	383,870.99
Accounts payable for book accounts during December .....	161,850.85
Total.....	\$2,418,822.24

### The American Iron & Steel Mfg. Company.

The suit in equity brought by C. W. Wilhelm, administrator, and the Wilhelm family, of Reading, Pa., against the American Iron & Steel Mfg. Company, has been withdrawn by the plaintiffs, who pay the entire costs. It was claimed in this suit that the American Iron & Steel Mfg. Company had impaired its capital by the payment of dividends on common stock. The Wilhelms, who had sold all their common stock, and held only preferred stock, prayed that an injunction might be declared prohibiting the future payment of common stock dividends. The officers and management of the company employed the services of one of the leading expert accountants of the country, who went over every item of its accounts from date of incorporation. The conservative analysis of the expert proved the company to be in even better shape than announced in its published annual reports, excellently well managed and on a most sound basis.

**A Large Contract for Castings.**—Through C. R. Horn, the New York representative of Davies & Thomas, iron founders, of Catasauqua, Pa., a contract has been secured for the rapid transit tunnel between New York and Brooklyn. The distance is between 7500 and 8000 feet and the cast iron tubing for it will call for from 16,000 to 20,000 tons of castings. Deliveries are to begin on April 1, at the rate of 12 tons per day, which is to be increased from time to time until delivery at the rate of 60 tons per day is reached. The delivery will extend over about two years. In addition to this there will be castings for the shafts and later on for the approaches, so that in all probability the total tonnage will reach 25,000 tons. Work on making the castings has already begun at Catasauqua.

Agents for a New York syndicate are working to form a combination of mine car supply companies in Western Pennsylvania and West Virginia. They already have 18 plants and are negotiating with others. The Western Pennsylvania territory embraced includes Pitts-

burgh, Irwin, Greensburg and on through to the Connellsville coke region. All the large concerns, with a few exceptions, have named a price and have given options on their plants.

## MANUFACTURING.

### Iron and Steel.

During the present year the Shenango Furnace Company expect to erect two additional furnaces at Sharpsville, Pa. Each will be 20 x 80 feet and will have an annual capacity of about 125,000 tons of Bessemer and basic pig iron. The company now operate three furnaces at Sharpsville, with a total annual capacity of 220,000 tons. When the new furnaces are running their annual capacity will be about 470,000 tons.

Rebecca Furnace of the Kittanning Iron & Steel Mfg. Company, Kittanning, Pa., has again been banked down for want of coke. This company have 40 cars of coke in the hands of the Pennsylvania Railroad between the Connellsville district and the furnace plant, and while it has been on the road for several weeks the coke has not yet been delivered.

The Ohio Pressed Steel Company, recently organized at Youngstown, Ohio, with a capital stock of \$25,000, have elected George D. Wick president, Porter Pollock vice-president, and George L. Claypool secretary and treasurer. They propose to manufacture pressed steel specialties, including D-shaped shovel tops, the patent for which they control in the United States. A plant similar to the one to be built in Youngstown is in operation at Ottawa, Canada, but the product is not sold in the United States. As soon as a site for the new plant has been secured contracts will be placed.

George Greer and Stewart Thompson of New Castle, Pa., have been appointed receivers for the Frankford Steel & Forging Company of Ellwood City, Pa. It is probable that the plant will be kept in operation.

Work on the new plant to be erected by Charles T. Schoen at McKee's Rocks, Pittsburgh, for the manufacture of steel car wheels will be started in a short time, and it is expected to begin making of car wheels about July 1 next. Initially the plant will consist of two open hearth steel furnaces of 25 tons capacity each, with a product of 100 tons daily, and one mill for the rolling of the car wheels, with a capacity of from 350 to 400 wheels a day. These wheels will be rolled from the ingots, which will be cast in iron molds in the crude shape of a wheel. The rolling mill equipment is already completed, and has been tried and found satisfactory. The plant to be erected includes a steel plant, a rotary rolling mill, power house, gas producing plant, office and incidental structures, all of which will be of steel frame and steel exterior. It is probable that Mr. Schoen will erect a plant at Butler, Pa., to make car wheels for the Standard Steel Car Company at that place.

The directors of the McKeesport Tin Plate Company met in the Frick Building, Pittsburgh, last week and elected the following officers: E. R. Crawford, president; E. P. Douglass, vice-president; E. W. Pitts, secretary and treasurer; J. C. Smith, F. T. Mason and E. P. Douglass, Executive Committee; J. E. Lauck, general manager, and W. L. Cirry, superintendent. The tin plate plant of this concern under erection for some months at Port Vue, near McKeesport, Pa., will soon be completed and is expected to be in operation in March. The plant will contain ten tin plate mills.

The lease of the Fort Pitt Iron & Steel Company on the Keystone Rolling Mill, in Pittsburgh, will expire on February 16 and will not be renewed. It is not known at this time whether the plant of the Keystone Rolling Mill will be operated by other parties or not. The output of the plant has been muck bar and skelp.

The Franklin Steel Works, Boston, Mass., manufacturers of Standard toe calks, have purchased the property at Joliet, Ill., known as the Joliet Wire Company, and consisting of 5 acres of land and a brick building 60 x 208 feet, located on the Chicago, Rock Island & Pacific Railway. The company will operate their new plant in connection with their Boston works, and will be in a much better position than heretofore to give their customers prompt and satisfactory service.

One building 64 x 363 feet and another 82 x 206 feet are in course of erection at the Fair Haven plant of the National Wire Corporation of New Haven, Conn., manufacturers of rods, wire and wire nails. The buildings will be two and three stories, of mill construction, brick, with gravel roofs, and equipped with elevators. The machinery has all been contracted for, although a large part of it is being built in the company's new machine shop. They are also building a new mill office, 41 x 63 feet, two stories, in which rooms will be provided for the superintendent, assistant superintendent, time clerks, chief engineer, draftsmen, and chemical and physical laboratory.

On application of Samuel Morris, superintendent of the Newark Iron & Steel Company of Newark, Ohio, that company have been placed in the hands of W. E. Miller as receiver, who has been given permission by the courts to borrow \$6000 to conduct the business for the present.

The building of the new pipe mill of the Susquehanna Iron & Steel Company, at Columbia, Pa., is almost completed, and will be turned over to the company by the contractors within the next few weeks.

The open hearth department of the Pennsylvania Steel Company's works, at Steelton, Pa., were, on February 7, producing steel for the first time in three weeks. While the fuel situation has improved somewhat, three of the blast furnaces were banked at intervals last week. The delays on account of the lack of coal have cut almost in half what would have been the normal product of the mills during the first month and a half of the year, and this in the face of unprecedented orders on the books for delivery as soon as the material can be turned out. The company will have to move rapidly if they hope to equal last year's business, when \$4,223,004.53 was paid out at the local works in wages to workmen. More than 8500 men are now on the pay roll.

At a meeting of the creditors of the Continental Iron Company, held at Warren, Ohio, on Monday, February 9, it was decided to sell the rolling mill at Wheatland, Pa. In 14 months the mill, operated by a trustee, is said to have shown a profit of \$22,000. The indebtedness of the company is \$385,000, embracing several contested claims, the largest of which is \$112,000, held by the A. M. Byers Estate of Pittsburgh.

The Penn Iron & Coal Company, who are rebuilding their blast furnace at Canal Dover, Ohio, expect to have it ready for operation this month or early in March. The new stack will be 85 x 20 feet and will use coke as fuel. The annual capacity will be about 140,000 tons of Bessemer iron.

The Union Steel Company of Pittsburgh expect to have their No. 1 blast furnace, at Donora, Pa., ready for blast about August 1, and No. 2 furnace by September 1. Each stack will be 85 x 22 feet and each will have a daily capacity of about 500 tons of iron.

The Sharon Steel Company of Sharon, Pa., expect to have their No. 2 blast furnace ready for operation about May 15 and No. 3 about July 15. The furnaces are each 85 x 19 feet, and each will have a daily capacity of about 400 tons of basic pig iron, which will be used in the open hearth steel works of the company.

The Cambria Steel Company, at Johnstown, Pa., are further increasing their open hearth production by the erection of five 50-ton furnaces, which will have an output of about 150,000 tons a year. Plans are now prepared at Johnstown for a still further increase in the open hearth capacity, and it is stated that when the present plan of improvements is completed the Franklin plant will contain 24 furnaces, 15 of 50 tons capacity each to be operated in the near future.

17.

#### General Machinery.

The Howe Scale Company, Rutland, Vt., advise us that part of the coal handling machinery that has been made at their Rutland factory will hereafter be made at a new plant about to be opened at Grand Crossing, Chicago, Ill. The transfer covers the Harrison conveyor, the Case leg elevator, the tower outfits, and the cable road track work, but does not include the McCaslin conveyor or cable car departments, nor does it in any way affect the scale, truck, power hammer, copying press or coffee mill departments. The company hope that the transfer of a part of the business will relieve the seriously congested condition of their Rutland plant and enable them to take better care than formerly of orders for such lines as are retained at the main plant.

The Simonds Mfg. Company, gear cutters and general machinists, Pittsburgh, are installing a 24-inch Gleason bevel gear planer. This company are having an active demand for cut gears, of which they make a specialty.

The Welmer Machine Works Company of Lebanon, Pa., are at present erecting the bell and hopper and charging apparatus at the top of the new furnace of the Penn Iron & Coal Company at Canal Dover, Ohio. The third Welmer blowing engine is now being erected at the Hannah Furnace of the Republic Iron & Steel Company at Youngstown, Ohio. This engine is 50 inches diameter steam cylinder, 96 inches air cylinder, 60-inch stroke, and weighs 185 tons.

Last week the Titusville Iron Company, at Titusville, Pa., presented all their employees who were with the firm during the whole of the year 1902 with a sum of money amounting to 5 per cent. of individual earnings during last year. They also reduced the number of hours constituting a week's work to 55, with a sufficient increase in wages to net a 10 per cent. advance. The company manufacture oil well supply machinery and plate iron work and employ about 150 men.

The East St. Louis Locomotive & Machine Shop Company, East St. Louis, Ill., have leased a building at Eighteenth street and Southern Railway, which they have equipped with the latest improved machinery for rebuilding and repairing locomotives, engines, &c., and for doing a general machine shop business. About \$15,000 worth of machinery has been installed, which was mostly obtained from the Niles Tool Works Company of Hamilton, Ohio, and the American Tool Works Company of Cincinnati. The officers are M. M. Stephens, president; F. J. Johann, vice-president; C. H. Huff, second vice-president; George W. Allen, secretary and treasurer, and J. P. Bay, general superintendent.

The Allentown Foundry & Machine Company, Allentown, Pa., contemplate the erection of a large addition to their plant.

Heck & Marvin, Findlay, Ohio, founders and machinists, have recently reorganized with a capital stock of \$100,000 and expect shortly to erect another addition to their plant. The proposed building will be 44 x 116 feet.

The Holthoff Machinery Company, Cudahy, Wis., say that they have had more than the usual number of inquiries for mining machinery during the past month and from several very large plants. While they did not secure any very large contracts during the month, they took a number of medium sized ones. They report that indications for future business in their line of work are extremely good. They find that there is a great deal of activity in the line of new milling plants and a large number of dividend paying properties are increasing their present facilities. Both in the mining machinery line and in boilers and heavy sheet metal work there appears to be a great demand and apparently in excess of the capacity of the various shops throughout the country.

The Chicago House Wrecking Company, Chicago, report that they have not found business as promising as it might have been during the past month. At the same time they have had all they could do to take care of orders. The bulk of the inquiries that they are receiving for machinery are from the Southern and Western States. They also state that they seem to be getting more inquiries from Mexico than ever before, having made during the past month two shipments of boilers and engines into Mexico.

The Silver Bros. Iron Works Company, Salt Lake City, Utah, have purchased property at Salt Lake City upon which they will erect a modern machine shop and foundry.

The Western Air Brake Repair Company of Pittsburgh have applied for a Pennsylvania charter for the purpose of erecting a plant to repair all kinds of air brakes. The plant will be located in the Pittsburgh district. A. L. Swift, Stephen Stone and R. W. Anderson are the incorporators.

The Rockford Bolt Works, Rockford, Ill., are adding a one-story brick and stone building 75 x 100 feet to their factory. The new building will be used as a forge room, warehouse and blacksmith shop.

The Challenge Machinery Company of Chicago are building a new plant at Grand Haven, Mich. The factory building is approximately 50 x 500 feet, two stories in height, with boiler room and engine plant adjoining. The engines are to be 125 horse-power, and two boilers of 100 horse-power each will be installed. The estimated cost of the construction is \$40,000.

The Carter & Hakes Machine Company, Winsted, Conn., manufacturers of milling machinery, have found it necessary, in order to properly take care of their increasing business, to increase their capital stock to \$25,000, all of which is paid in.

The Aumen Machinery & Supply Company, Baltimore, Md., recently incorporated, have succeeded to the general jobbers machinery and supply business of Aumen & Garrett, and in addition will manufacture babbitt metal, a new compressing grease cup and several other specialties. No new equipment will be required, as the plant is already equipped with the requisite appliances and no additions to buildings are contemplated at present. The officers are William S. Aumen, president and treasurer; Joseph G. Coale, vice-president, and W. F. C. Gerhardt, secretary.

The Williamsport Clutch & Pulley Company, Williamsport, Pa., will be incorporated for \$100,000, with officers as follows: T. A. Thomas, president; N. B. Bubb, vice-president; H. A. Bubb, secretary and treasurer. The company have acquired the Crowell Clutch & Pulley Company of Westfield, N. Y., and the Rundlo-Bubb Foundry Company of Williamsport, and will manufacture a complete line of power transmission machinery. Some purchases of equipment have already been made, but not to any great extent. The company expect to be in operation by May 1, and until that time the foundry business will be conducted by H. A. Bubb & Co.

The Davis-Forrest Machine Works, recently organized, have succeeded to the business of the Davis Machine Shop, at Savannah, Ga. The new company have moved into new and larger quarters at 307-311 Bay street, West, where considerable new machinery has been installed, and the company are better prepared to turn out the best quality of machine and boiler work, forgings, castings, &c.

Lathes, planers, other iron working machines and a traveling crane with hoist for handling heavy machinery will be required by the L. W. Gunby Company, who were recently organized and succeeded L. W. Gunby, Salisbury, Md., in the hardware and machinery business. The company will in the spring erect a large and up to date foundry and machine shop to take care of their business, which has increased beyond the capacity of their present small machine shop.

The business formerly conducted by the C. Hanika & Sons Architectural Iron Works of Celina, Ohio, has been reorganized and articles of incorporation filed for the C. Hanika & Sons Iron Company, with a capital stock of \$75,000. The incorporators are: C. Hanika, F. A. Hanika, Harry S. Hanika, Chas. E. Hanika, Albro B. Paul, all of Muncie, Ind.; Lawrence Schunck and William Cron of Celina, Ohio. A number of new buildings will be constructed and the capacity of the plant otherwise increased.



The Frank Stutzman Patent Cutter Head Company will be organized shortly at Williamsport, Pa. A new plant will be built within the next three months, it is reported.

Joseph T. Ryerson & Son, Chicago, report that inquiries for machinery indicate a desire on the part of manufacturing concerns in all sections to equip themselves to care for the increased demand and to be enabled to cut their costs by improved facilities. They have recently secured important contracts for machinery from the following: Minneapolis Threshing Machine Company, Hopkins, Minn.; Casey & Hedges Mfg. Company, Chattanooga, Tenn.; Heitman & Cramer Company, Detroit, Mich.; Practical Gas Construction Company, North Chicago, Ill.; J. F. Holbrook, Los Angeles, Cal.; Standard Oil Company, New York; Hendricks Mfg. Company, Carbondale, Pa.; Kansas City Hay Press Company, Kansas City, Mo.; Bigelow Company, New Haven, Conn.; Heggie Bros., Joliet, Ill.; S. F. Bowser & Co., Ft. Wayne, Ind.; C. W. Baxter, St. Marys, Ohio; Rudolph J. Decker, Salt Lake City Utah; Valk & Murdock Iron Works, Charleston, S. C.; Leetonia Boiler Company, Leetonia, Ohio; Sharkey & Peck, Chicago; Holthoff Machinery Company, Cudahy, Wis.; L. Schreiber & Sons, Cincinnati, Ohio; Worden-Allen Company, Milwaukee, Wis.; American Distilling Company, Pekin, Ill.; Joliet Bridge & Iron Company, Joliet, Ill.; Perth Amboy Shipbuilding Company, Perth Amboy, N. J.; Maryland Steel Company, Sparrows Point, Md.; Continental Iron Works, New York; Norfolk & Western Railway Company, Kenova, W. Va.; Chicago Great Western Railway, Chicago.

The Chambersburg Engineering Company of Chambersburg, Pa., have so many orders booked that they are compelled to operate their plants Sundays. The shops have been operated day and night since last September.

Chas. H. Besly & Co., Chicago, report business very good during January, with shipments of Gardner grinders to New York, New Jersey, Massachusetts, Michigan, Missouri and Pacific coast. They are having an exceptionally large demand for oil cups. Helmet temper taps are being used largely by bolt works where hard usage is required of taps. Their orders from South America and Europe continue in an increasing volume. Business this year has opened up better than ever before.

The Union Foundry & Machine Company of Catasauqua, Pa., have called a special meeting of their stockholders on April 7 for the purpose of voting on a proposition to increase the indebtedness. The company have orders ahead for months to come and propose to enlarge their plants.

The Chicago Pneumatic Tool Company, Chicago, announce the consolidation of the Aurora, Ill., and Cleveland plants at Cleveland. The removal of the equipment at Aurora to Cleveland will take place in the near future. The change has been made upon the basis of increased output and more economical production.

A special meeting of the Kelly & Jones Company of Pittsburgh will be held on April 16 to vote on a proposition to increase their indebtedness \$500,000. It is understood that a large part of this increase will be used in the building of a large foundry and machine shop at Greensburg, Pa. The Kelly & Jones Company are manufacturers of steam and plumbing supplies, and are large jobbers in pipes and tubes and related lines.

#### Power Plant Equipment.

The Thompson Iron Works, Philadelphia, Pa., have begun to tear down the old house adjoining their plant, preparatory to the erection of an addition to their boiler shop.

Complete equipment of machinery is required by the Capital Light & Power Company of Santa Fe, N. M., who will in the near future install a 5000 horse-power electric plant on the Pecos River, to be generated by water power, to supply Santa Fe and Las Vegas, N. M., with power and light. The plant will be located about midway between the two cities, and it is expected that construction will begin early in the spring. James G. Halapleus, whose office is in Toledo, Ohio, is general manager.

The Quincy Engine Works, Quincy, Ill., have already taken the necessary steps to increase their capacity by the addition of machine tools, and orders for some of these have been placed. They find the demand for their product to be all they could expect, and have much prospective business in sight in addition to a well filled order book.

The new Hotel Belmont, Forty-second street and Park avenue, New York City, will have for its engine equipment one 225 horse-power and three 300 horse-power medium speed tandem compound four-valve engines, direct connected to 150-kw. and 200-kw. generators. The contract for the engines has been awarded to the Fitchburg Steam Engine Company through their New York office, Edwin H. Ludeman, manager, 39-41 Cortlandt street. The same company have recently furnished the John Stephenson Company, car builders, Elizabeth, N. J., one 475 horse-power engine of the same type, and are building two 300 horse-power compound engines for driving direct connected alternators for the new hat factory of Fred. Berg & Co., Orange Valley, N. J.

The Blair & Gazzam Mfg. Company, Pittsburgh, recently shipped a 200 horse-power gas engine to West Virginia and have orders for a 450 horse-power gas engine. These engines are made from designs furnished by Thomas Charlton of the firm, who is engaged on plans for engines of 3000 horse-power capacity.

The Pierce-Crouch Engine Company of New Brighton, Pa., builders of Brighton gas engines, have received a contract from the Pittsburgh & Lake Erie Railroad for six pumping plants to be installed at different points along the line between the Pittsburgh and Youngstown. Each is to include a Brighton gas engine with triplex pump. The contract includes engines and the pumps, but the latter will be built by the Goulds Mfg. Company of Seneca Falls, N. Y. The Pittsburgh & Lake Erie Railroad are already using five of the Brighton gas engines.

The Russell Engine Company, Massillon, Ohio, have received an order from Yokohama for a tandem compound engine to go to Kobe, Japan.

Arrangements have been completed for the construction of a plant for the manufacture of gas and gasoline engines and hardware specialties at Anderson, Ind. The first building erected will be 90 x 300 feet, with two 60-foot wings. The buildings will be occupied jointly by the Lambert Gas & Gasoline Engine Company and the Buckeye Mfg. Company. Both companies have been in active operation for some years, the Lambert engines having been built during the last 12 years. The new buildings will give to both companies increased capacity, as the plants will be equipped with modern tools. The buildings formerly occupied by the Buckeye Mfg. Company were recently sold to the Pioneer Pole & Shaft interests, there being 13 plants in the combination. The Anderson works are said to be the largest of the merged companies, the value being estimated at \$500,000.

A. Hasbrouck, quartermaster, Fort Totten, Willets Point, N. Y., will receive bids until March 3 for constructing water works and a sewer system.

Sealed proposals will be received at the office of the City Clerk, South McAlester, Ind. Ter., until February 28 for water works and sewerage, including about 1700 tons of cast iron pipe, pumping machinery of 3,000,000 gallons daily capacity, erection of steel water tower 30 x 85 feet, gate valves, boxes and fire hydrants. Chester B. Davis, San Antonio, Texas, is the engineer; Fielding Lewis, mayor.

The W. De Wees Wood Company Department of the American Sheet Steel Company, McKeesport, Pa., have contracted with Wm. B. Scaife & Sons Company of Pittsburgh, Pa., for a 5000 horse-power We-Fu-Go water softening and purifying system. This plant, in addition to supplying the boilers with pure water, freed from the sulphuric acid with which the Monongahela River is impregnated, is to supply water used in the process of manufacturing some of the finer grades of sheet iron. This is the third contract placed with Wm. B. Scaife & Sons Company by the American Sheet Steel Company during the last four years for water softening and purifying systems. Among some of the other contracts taken by Wm. B. Scaife & Sons Company for both the We-Fu-Go and Scaife systems are the following: Republic Iron & Steel Company, East St. Louis, Ill., 2750 horse-power; Salem Iron Company, Leetonia, Ohio, 2500 horse-power; Edward E. Rieck Company, Pittsburgh, Pa., 1000 horse-power; Buffalo & Susquehanna Iron Company, Buffalo, N. Y., 8000 horse-power; Rochester & Pittsburgh Coal & Iron Company, Dubois, Pa., 2500 horse-power, and others.

H. D. Bokop, E. J. Webb, August Martin and James Kerns have formed a company at Defiance, Ohio, for the manufacture of gas engines, the invention of Mr. Kerns. They will erect a factory at Defiance to manufacture the goods.

By the breaking of a valve, which set fire to a barrel of oil, the main building of the Harrisburg Boiler & Mfg. Company, Harrisburg, Pa., was burned on February 3. The loss will be more than \$25,000, partly covered by insurance. A meeting of the directors will be held this week, at which the rebuilding of the old building will be authorized, and bids will be asked for an additional annex, 160 feet in length. This will give the main building of the works a length of 340 feet. The new building will be constructed entirely of steel. With a large order for pipe for Barcelona, Spain, on hand the company will be compelled to suspend operations until the new building is finished. After the works are ready for operations again the company will enter more heavily into the export pipe business, which it has pursued with much success for several years.

Last week was one of the busiest weeks in the history of the Harrisburg Foundry & Machine Works, Harrisburg, Pa. Many large orders have been booked, among them the following: Six 150 horse-power engines, with which to equip lake steamers, for the Northern Steamboat Company of Buffalo, N. Y.; four large electrical engines for the Consolidated Gas Company of Baltimore; two 125 horse-power engines for steel works in Dyersburg, Tenn. Engines shipped this week included four 500 horse-power machines to the Lackawanna Coke & Coal Company and three electrical 175 horse-power machines to the Brooklyn Institute of Arts and Sciences. The fuel famine at the works has been relieved, and the plant is running day and night to keep up with the rush of orders.

The Hammond Iron Works of East Warren, Pa., manufacturers of boilers, stacks, tanks, &c., are to be enlarged. Changes in the old buildings will be made and new mills erected. Particulars will be announced in the near future.

The boiler makers of Wilkes-Barre, Pa., have asked for an increase of wages and shorter hours.

**Foundries.**

The Rosedale Foundry Company, Allegheny, Pa., have bought all the patents, patterns and good will of the Playford Stoker Company, Cleveland, Ohio, and will hereafter manufacture the Playford stoker. C. J. Allen, formerly superintendent of the Cleveland works, will assume the same position with the new company. William J. Brant, 830 Park Building, formerly manager of the Pittsburgh office of the Playford company, has been appointed general sales agent. Many improvements have lately been made to the Rosedale plant, which will enable the company to properly handle the stoker business in connection with their other line of goods.

The business of Abendroth Brothers, with office at 109 Beekman street, New York, and foundry at Port Chester, N. Y., has assumed such proportions that they have found it necessary, notwithstanding their present works cover an area of more than 8 acres, to make a division of their plant. They have just begun the erection of a new building on the opposite side of the Byram River in the State of Connecticut. The new structure will be of brick, one story high, and will be devoted exclusively to the production of sewer pipe and fittings. When the improvements are completed the crowded condition of the present foundry will be relieved and it can be wholly devoted to stove work.

Uline Brothers, Ballston, N. Y., manufacturers of steam and gasoline engines, boiler fronts and all kinds of boiler castings, whose foundry was recently destroyed by fire, will rebuild at once, replacing the burned building by a brick structure. Besides the foundry equipment some machinery in the machine shop was damaged by water, but the extent of the loss is not known and it is not yet determined what new equipment will be required. The engine and boiler were not damaged.

The Sharon Foundry Company, Wheatland, Pa., have completed their pattern house, which is 50 x 150 feet in size, the second floor being used for storage of patterns. Their pattern shop is fitted up with the latest improved machinery. The foundry building is now under way and the plant is expected to be in full operation in April. The officers are Joseph Riddell, president, and Thomas Kennedy, secretary and treasurer.

The Wilkes Foundry Company of Toledo, who recently erected a large foundry, have found that their business has already outgrown the present plant, and they have completed plans for the immediate erection of another building, which will more than double their capacity.

The Sandusky Foundry & Machine Company, Sandusky, Ohio, who have recently commenced operations in their new foundry, are now working until 9 p.m. on a large contract for castings placed by the Cleveland Car Company of Cleveland.

The Gadsden Car, Foundry & Machine Company, Gadsden, Ala., may increase their capital stock to \$50,000. The company have completed all the buildings of their plant.

The North Wales Foundry Company, North Wales, Pa., recently organized, have taken over the plant of the North Wales Foundry Company, Limited, and will manufacture gray iron castings, hot air registers, bath boilers, stacks, &c. The new company will considerably improve the plant, installing new boilers and special machinery for manufacturing bath boilers, all of which has been contracted for, the latter being furnished by the Michigan Mfg. Company of Ypsilanti, Mich. Frederick Sabin & Co., 121 North Second street, Philadelphia, are interested.

G. D. Berry, president of the Berry Electric & Mfg. Company, St. Joseph, Mo., has purchased the Columbia foundry and will organize the Berry Foundry & Mfg. Company to operate it. The plant is especially equipped for making heavy gray iron castings and there is also a brass foundry connected with it. It is the intention of the new owners to spend \$20,000 in enlargements to take care of the increasing business of the plant, which is now overcrowded with work. Mr. Berry is also looking into the matter of establishing a malleable plant in St. Joseph. The officers of the company will be G. D. Berry, president; W. C. Ransom, secretary, and E. F. Dengler, superintendent.

**Bridges and Buildings.**

The South Pittsburgh Iron Company, recently organized with a capital of \$100,000, will locate their works in Claysville, Pa. The company advise us that their plant will include foundry and machine shop, structural iron works and bridge building plant. The machinery is on the ground for the works and the buildings are being erected, and it is expected the plant will be in partial operation in April. The main offices will be in the Frick Building, Pittsburgh.

Huston & Cleveland of Columbus, Ohio, representatives of the American Bridge Company, have secured the contract for the superstructure for the Mill Creek Viaduct, to be built at Youngstown by the Mahoning County Commissioners. The bridge will be a double decker of the lattice plate girder type, and the structural work will cost \$150,000.

The Malleable Iron Company's Works at Spring City, near Phoenixville, Pa., are to be connected with the main line of the Pennsylvania Railroad by a new iron bridge.

The Gruson Iron Works, at Chester, Pa., have an order under way for the building of the structural iron work for the

new forging plant of the Frankford Forge Company of Eddystone.

**Fires.**

The plant of the McKinnon Dash Company, Buffalo, N. Y., was destroyed by fire on the night of February 6. It consisted of a number of one and two story shops that occupied nearly the entire block bounded by Amherst, Churchill and Kell streets. The loss will be between \$125,000 and \$150,000. The plant will be rebuilt, and in the meantime the company will fill orders from their plants in Troy, N. Y., and St. Catharines, Ont.

The Holbrook & Armstrong Iron Company's plant at Racine, Wis., was damaged \$4000 by fire February 4.

The coal crusher of the Cambria Steel Company, Johnstown, Pa., was burned February 6. The loss is about \$25,000.

The Wigtown Iron Works, Greenville, S. C., were damaged \$4000 by fire February 4.

The car barns, repair and machine shops of the Eastern Ohio Traction Company, Chagrin Falls, Ohio, were destroyed by fire February 6. The loss is placed at \$85,000.

The plant of the Ontario Malting Company, Oswego, N. Y., was destroyed by fire February 10. The loss will reach \$100,000.

The passenger car section and the cabinet shop of the Pennsylvania Railroad Company's shops, at Pitsburgh, Pa., were destroyed by fire February 10, entailing a loss of \$15,000.

**Hardware.**

Baker Gun & Forging Company, Batavia, Ill., in connection with some new arms which they are putting on the market are installing a new power plant and increasing materially the capacity of their plant.

The Enterprise Enamel Company, Bellaire, Ohio, have increased their capital stock from \$100,000 to \$200,000 by making stock dividends. The stock is all invested in additional buildings and machinery, and will be used for the same line of goods as the company have been making, the Chrysolite enameled steel ware and related lines.

At a meeting of the American Nut & Bolt Fastener Mfg. Company, held in the Frick Building, Pittsburgh, last week, Milton Bartley was elected president, George W. Miller vice-president, and Barton Grubbs secretary and treasurer.

**Miscellaneous.**

The Keystone Pattern & Foundry Company of Evans City, Pa., have been placed in the hands of a receiver. This is about the only iron plant in Western Pennsylvania which has had any trouble for a long time past.

The Burt Mfg. Company, Akron, Ohio, announce that they have just made a shipment of six oil filters to Stockholm, Sweden; five to Buenos Ayres, Argentine Republic, and six to Yokohama, Japan. They have recently received the sixteenth order for a copper oil filter from the International Paper Company.

The Keystone Match & Machine Company of Lebanon, Pa., have booked an order for 10,000 automatic vending machines for the Doremus Automatic Vending Company of New York. The machine is a new one lately patented by W. D. Doremus, an expert on mechanical devices and lately in the employ of the National Government at Washington. He is the originator of the electrical stamping machines used by the Post Office Department.

Application will be made on Feb. 16 for a charter for a new corporation to be known as the Conshohocken Brass Company of Conshohocken, Pa., for the manufacture of iron or steel, or both, and for the manufacture of art productions in metal. The organizers of the company are H. Bayard Hodge, Harold P. Keen, John A. Collins and William H. Roth.

The Westinghouse Electric & Mfg. Company of Pittsburgh intend to enter largely into the manufacture of electric motor vehicle equipment and automobile outfits. The company will enter into the line of fittings, but will not make the carriages or cars. The exhibit of the Westinghouse people at the Automobile Show in New York recently was a very complete one.

The Philadelphia Feldspar Company, manufacturers of mineral door knobs and buttons, have erected a reduction plant at Charlotte, N. Y., on the Lincoln Park branch of the Buffalo, Rochester & Pittsburgh Railroad. The building is of frame, five stories high, and 150 x 200 feet. The building is practically a large crusher plant. Feldspar is mined near Kingston, Ont. After being reduced it is placed in bags and shipped to Philadelphia, where the manufacturing plant is located. George E. Worth is manager of the Charlotte plant.

The Acetylene Generator & Mfg. Company have commenced operations in a new plant at Wapakoneta, Ohio. They will manufacture acetylene gas generators and fixtures for isolated lighting plants.

The Crestline Mfg. Company, Crestline, Ohio, have incorporated with \$50,000 capital stock, by W. R. Boyd, J. Flowers, G. A. Musselman, Jacob Babst and C. E. Stetter. They will deal in general iron work.

The Car Wheel Grinding Shoe Company have been incorporated at Niagara Falls, N. Y., with a capital stock of \$50,000, and will erect a plant there.

The capital stock of the Bond Steel Post Company, Lansing, Mich., has been increased from \$40,000 to \$100,000.



The Buffalo Wire Company, Buffalo, N. Y., have been incorporated to manufacture wire cloth and other articles of wire and will take up and carry on the business of the late Philip Scheeler, manufacturer of wire cloth, &c. The directors are Philip and Martin Scheeler and Ferdinand Grimm.

The Kemp & Burpee Mfg. Company, Syracuse, N. Y., manufacturers of Kemp's improved madure spreader, will locate a large branch plant at some point in the West. The company are considering locations in Waterloo and Davenport, Iowa, and Moline and Rock Island, Ill., all of which will shortly be visited by their representatives to determine in which one the plant will be built.

The organization of the Miles Steel & Iron Company, Middletown, Ohio, has been completed and they will immediately commence the erection of a plant in that city for the production of cultivators, shovel steel with soft back and steel face and edges, also steel for punches and dies, under the Miles patents. They will also manufacture dental broaches and instruments and other dental specialties, also under the Miles patents, all of which are now owned and controlled by the company. They expect to consume the greater portion of the steel product by making it up into cultivators, shovel supplies, punches, dies and instruments. The new plant, it is expected, will be ready within four months.

Justice Keneffick of the Supreme Court has appointed George S. Ettla and Theodore J. Welles temporary receivers of the United Barium Company of Niagara Falls. Mr. Ettla and Mr. Welles are president and superintendent of the company respectively, and they gave a bond of \$100,000. The liabilities are stated at \$121,039.48, while the assets are \$91,248.61 and "certain interests in patent rights and in various processes for the manufacture of chemical products which are of a purely speculative value." It is understood that the company will be reorganized.

The directors of the Norfolk-Hampton Roads Shipbuilding & Dry Dock Company, Norfolk, Va., will meet March 16 to begin active operations. At that time it is expected that all details of the plans for their new plant will be completed and that within a few days thereafter the work of construction will be begun. C. W. Tebault is general manager.

The Whitlock Coll Pipe Company, Hartford, Conn., manufacturers of feed water heaters, condensers, coils and bends, contemplate the erection of another addition to their plant, plans for which have not yet been drawn up.

The Red Cross Mfg. Company, Bluffton, Ind., held their annual meeting on January 19 at the offices of the company. The directors were re-elected for the ensuing year. Report of the year just closed shows their business to have been prosperous and satisfactory to the company. Since their last meeting in January, 1902, their works have been enlarged 100 per cent. to supply the increasing demand for Red Cross windmills, pumps, &c., throughout the United States and foreign countries.

The A. J. Beckley Company, New York and Garwood, N. J., have added to their plant during the past year new and improved perforating presses to meet the demand for perforated metals and appliances used in installing stone crushing plants. The company report a large increase in business during the year just closed over and above that of previous years.

The Sanitary Mfg. Company of Pittsburgh have secured a contract for the plumbing work for a hotel and 50 or more houses, to be built by the Westinghouse interests at Trafford City, Pa. It is said the contract amounts to over \$50,000.

The Goodwin & Kintz Company, Winsted, Conn., have recently received a number of orders for brass and special sheet metal parts from automobile and motor cycle manufacturers. They state they are well equipped for this kind of work, as well as spinning of all kinds of metals.

The Central Connellsville Coke Company, New Salem, Pa., will immediately add 100 new coke ovens to their present plant of 250, making a total of 350 ovens. It is expected to have the 100 ovens completed next summer. W. H. Ritenour is general managers, and the stockholders are Herbert De Puy, J. H. Hillman, J. P. Brennen of Pittsburgh, Pa., and I. C. Neff of Uniontown.

The American Shipbuilding Company of Cleveland have closed contracts for two more steel vessels to be built during the coming season. They will be large car ferry steamers for the Pere Marquette Railway Company, and will cost about \$750,000. They will be duplicates of the vessels built for that company two years ago, and will carry cars exclusively between Ludington, Mich., and Milwaukee.

At the annual meeting of the Board of Directors of the Union Switch & Signal Company, held at Swissdale, Pittsburgh, on Monday, February 9, H. G. Prout of New York was elected first vice-president and general manager; E. G. Goodman, second vice-president, having tendered his resignation as general manager.

Work was begun last week on the Semet-Solvay coke ovens in North Lebanon, Pa., at the furnaces of the Pennsylvania Steel Company located there.

The York Automatic Scale Company of York, Pa., have been organized for the manufacture of iron and steel articles.

G. W. Reider, C. W. Yost and D. E. Small, all of York, are the incorporators.

The management of the Middletown Car Works, Middletown, Pa., are making arrangements to build an addition, 48 x 91 feet, to their already large plant. Heavy orders beyond the capacity of the plant have necessitated the change.

The Standard Oil Company have taken over the People's Natural Gas Company of Pittsburgh. It is stated that the Standard Oil Company will build another large gas main from the gas fields controlled by the Standard Company in West Virginia into Pittsburgh. Negotiations for the sale of the stock of the People's Natural Gas Company have been pending for some time. The company are capitalized at \$1,000,000, divided into 20,000 shares of a par value of \$50 each. It is said that the Standard Oil Company paid \$200 per share for a controlling interest in the stock.

## OBITUARY.

In an announcement February 5, in these columns, of the death of William H. Miller of the firm of Miller & Van Winkle, Brooklyn, manufacturers of steel wire and steel springs, the omission to add junior to the name has given the impression that reference was made to William H. Miller, senior partner of the firm, who still enjoys his customary good health. The notice referred to William H. Miller, Jr., aged 36 years, eldest son of W. H. Miller, who died at his home in Brooklyn, January 30, of heart failure, having been in failing health for over a year.

### NOTES.

JOHN HALLETT, president of the Hallett Iron Works Company of Chicago, died suddenly from apoplexy on January 31, at Defuniak Springs, Fla., aged 72 years. He was born in England and went to Chicago 50 years ago, where he engaged in the iron business.

LOUIS MANDEL, an iron dealer at 437 East Twenty-third street, New York, was murdered while sitting in his office on Sunday morning, February 8, robbery being apparently the motive of the crime. Mr. Mandel was 57 years of age, and had been engaged in the scrap iron business in a large way for over 30 years.

E. A. HIBBS, who was for many years engaged in the manufacture of bath boilers on Bread street, Philadelphia, died at his residence, 432 North Thirty-third street, on February 2. Mr. Hibbs was a veteran of the civil war, and had a large acquaintance in business and financial circles.

WILLIAM C. FREEMAN, vice-president of the Lackawanna Steel Company, and for many years a prominent pig iron manufacturer, died on February 7 at his home at Cornwall, near Lebanon, Pa., after a brief illness. He was 62 years old.

CARL BINDER, a prominent civil engineer, died on February 5 at his home in Chicago. He was born in Germany in 1853, and for 11 years was royal supervising engineer in his native country. He came to America in 1884, and for a time was connected with the Lake Shore Railroad. He superintended the iron construction of several of the buildings at the Chicago World's Fair.

**The Tidewater Steel Company's Coking Plant.**—The 40 coke ovens being erected at Chester, Pa., for the Tidewater Steel Company by the Semet-Solvay Company of Syracuse, N. Y., will enable the Tidewater Company to produce pig iron at a considerably less cost than they can under present conditions. By a special arrangement with the Semet-Solvay Company and the Suburban Gas Company of Chester, Pa., the former will retain the by-products, and the latter will use the gas produced. The ovens will furnish all the coke which the Tidewater Steel Company use at a reduction in cost over present prices of from \$2 to \$3 per ton. The coke will cost them 80 cents to \$1 per ton less than the prices which they have been accustomed to pay even in normal times. This means a saving of \$1 to 1.25 per ton on all the pig iron which the company make. It is expected that the ovens will be finished by next summer. The Tidewater Company retain the right to buy the ovens outright within a certain period.

## The Iron and Metal Trades.

Our monthly blast furnace statistics show that the production of Pig Iron has been disappointingly small in January, the output of Coke and Anthracite Pig aggregating 1,472,788 gross tons, as compared with 1,537,245 tons in December. A considerable number of stacks has been blown out, some of them before it was absolutely necessary, so that the producing capacity now under prevailing conditions is fully 10,000 tons per week smaller than it was on the first of the year.

There has been some discussion of the question of the supply of Bessemer Pig for the leading interest for the second half of the year. It is not regarded as likely, however, that the matter will be closed at an early date, since it is somewhat difficult to estimate requirements so far ahead. A number of new furnaces are to come in during the next six months whose available make cannot well be calculated now.

The principal movement lately has been in Basic Pig Iron. Considerable quantities have changed hands in the Central West, on the seaboard, and in the St. Louis district. There has also been some buying of Low Phosphorus Iron, both domestic and foreign.

In Foundry Irons there has been a little more movement. Some interests in the Southern districts are still selling at about \$18 and \$18.25, Birmingham, while the majority of the large sellers continue to ask \$18.50 for No. 2. Little has been done lately in foreign Pig Iron, although the quantity which is being melted is considerable. Seaboard founders find the promptness and certainty of delivery a desirable feature.

In the foundry trade an interesting contract, secured by Davies & Thomas, is that for the castings for the New York-Brooklyn Tunnel. It calls for about 18,000 tons, which, however, will probably be increased to close to 25,000 tons before the work is finished. In the Pipe trade Philadelphia is looming up with requirements this spring of 37,800 tons.

There has been more inquiry lately for foreign Steel Billets, and negotiations are pending for fair quantities, both at the seaboard and in the interior. At seaboard Steel can be bought at \$27.50 to \$28. In the Pittsburgh district quite a large tonnage of Steel Slabs has changed hands recently. Lately there has been a good deal of demand for foreign Melting Stock, and the probability is that buyers and sellers will soon get together.

There have been no striking developments during the past week in Finished Iron and Steel. The tone continues good, and the tonnage which is being booked in nearly all departments is satisfactory.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

At date, one week, one month and one year previous.

	Feb. 11, 1903.	Feb. 4, 1903.	Jan. 14, 1903.	Feb. 12, 1902.
<b>PIG IRON:</b>				
Foundry Pig No. 2, Standard, Philadelphia .....	\$22.25	\$22.25	\$22.25	\$17.25
Foundry Pig No. 2, Southern, Cincinnati .....	21.25	21.25	21.75	14.75
Foundry Pig No. 2, Local, Chicago .....	23.00	23.00	23.50	16.00
Bessemer Pig, Pittsburgh .....	21.35	21.60	21.85	16.75
Gray Forge, Pittsburgh .....	20.50	20.50	20.50	16.25
Lake Superior Charcoal, Chicago .....	26.50	26.50	25.00	20.00

### BILLETS, RAILS, ETC.:

Steel Billets, Pittsburgh .....	30.00	29.50	29.50	29.00
Steel Billets, Philadelphia .....	*28.00	*27.50	*26.50	32.00
Steel Billets, Chicago .....	30.50	30.00	29.50	...
Wire Rods, Pittsburgh .....	35.50	35.50	34.50	35.00
Steel Rails, Heavy, Eastern Mill .....	28.00	28.00	28.00	28.00

### OLD MATERIAL:

O. Steel Rails, Chicago .....	18.00	18.00	18.50	15.00
O. Steel Rails, Philadelphia .....	20.75	20.75	20.75	19.00
O. Iron Rails, Chicago .....	24.00	24.00	24.00	22.00
O. Iron Rails, Philadelphia .....	23.50	23.50	23.50	21.00
O. Car Wheels, Chicago .....	24.00	24.00	24.00	16.50
O. Car Wheels, Philadelphia .....	22.75	20.50	20.50	17.00
Heavy Steel Scrap, Pittsburgh .....	21.00	21.00	21.00	...
Heavy Steel Scrap, Chicago .....	18.00	18.00	18.00	14.00

### FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia ..	1.93½	1.93½	1.93½	1.67
Common Iron Bars, Chicago .....	1.80	1.77½	1.75	1.75
Common Iron Bars, Pittsburgh ..	1.80	1.80	1.70	1.60
Steel Bars, Tidewater .....	1.75	1.75	1.75	1.62
Steel Bars, Pittsburgh .....	1.60	1.60	1.60	1.50
Tank Plates, Tidewater .....	2.10	2.10	2.10	1.78
Tank Plates, Pittsburgh .....	1.60	1.60	1.75	1.60
Beams, Tidewater .....	1.75	1.75	1.75	1.75
Beams, Pittsburgh .....	1.60	1.60	1.90	1.60
Angles, Tidewater .....	1.75	1.75	1.75	1.75
Angles, Pittsburgh .....	1.60	1.60	1.90	1.60
Skelp, Grooved Iron, Pittsburgh ..	1.90	1.90	1.90	1.75
Skelp, Sheared Iron, Pittsburgh ..	1.95	1.95	1.95	1.80
Sheets, No. 27, Pittsburgh .....	2.65	2.65	2.65	3.00
Barb Wire, f.o.b. Pittsburgh .....	2.50	2.50	2.50	2.90
Wire Nails, f.o.b. Pittsburgh .....	1.90	1.90	1.90	2.05
Cut Nails, Mill .....	2.10	2.10	2.05	1.95

### METALS:

Copper, New York .....	12.75	12.55	12.25	12.75
Spelter, St. Louis .....	4.85	4.85	4.65	3.87½
Lead, New York .....	4.10	4.10	4.10	4.10
Lead, St. Louis .....	3.97½	3.97½	3.97½	4.05
Tin, New York .....	29.20	28.65	27.95	24.55
Antimony, Hallett, New York .....	7.00	7.00	7.00	8.00
Nickel, New York .....	40.00	40.00	40.00	50.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York .....	3.79	3.79	3.79	4.19

\* Foreign.

## Chicago.

FISHER BUILDING, February 11, 1903.—(By Telegraph.)

During the past two days there has been an urgent inquiry for relatively small amounts of Pig Iron for delivery during the next two months. This demand comes mainly from large interests to cover contracts recently made for Castings, and reflects the slow movement of Iron on contract. Prices show but little variation from those current a week ago. Buyers manifest little interest in the third or fourth quarters of the year, but furnaces seem equally indifferent. In Steel the scarcity of Billets and Wire Rods is the most important feature, especially aggravating to those interests that are not self contained. Very high prices prevail for the few Billets and Rods available, the largest interest selling only to outside mills as an accommodation. Three thousand tons of Bessemer Rods have been sold during the week at \$37.50, Chicago. This condition is regarded as temporary, however. If continued it means the closing down of several mills, as there is no margin between the cost of intermediate material and finished products. There continues to be quite a heavy tonnage of Plates, with more activity in Bars, both Iron and Steel, than for many months. The heavy buying of Soft Steel Bars for 1903-1904, however, is not expected to take place until June this year. It is now understood that there will be no advance in prices. Last year the heavy buying movement occurred in March, incidental to the advance which took place on April 1. Structural Material continues very quiet, and it is significant that several of the most important railways have countermanded orders for improvements during 1903 aggregating between \$4,000,000 and \$5,000,000. This action is based on the in-



creased cost of material and labor, recent reports indicating that while there is a large increase in gross earnings, there is a material decrease in net returns, due to the enhanced cost of operating expenses. Increased freight rates or the abandonment of projected improvements, or both, seems to be the remedy to be applied by the management of the trunk lines. At the same time there is a continued active demand for relatively small amounts of Standard Rails. There has been considerable activity in Sheets, both Black and Galvanized, but keen competition prevents the full restoration of confidence. Merchant Pipe and Tubes have continued quite active, and further heavy sales of Nails and Wire are reported. One point of interest is the material increase in receipts of Anthracite Coal and the disappearance of premiums for spot supplies. Arrivals of Iron and Coke, however, are still inadequate for current needs.

**Pig Iron.**—The market has been quiet throughout the week, although at the close there is a better demand for early delivery, which is the most prominent feature, indicating that consumers are again meeting much difficulty in obtaining ample supplies on contract. It is asserted by those well acquainted with the situation that Iron is being melted fully 10 per cent. above the current production, which has a strengthening influence upon furnaces, both North and South. As far as this section is concerned there is no appreciable improvement in the movement of either Iron or fuel, and high prices for the latter are figuring conspicuously in the cost of production. The buying movement for the third or fourth quarter of the year is still deferred, consumers being impressed with the belief that there is but little possibility of prices being higher, while in a few months, with the removal of the freight blockade and better distribution of unfinished products, there may be a decline. Contracts for Castings are being placed to a considerable extent on the basis of present prices, and while to contract for supplies to cover at the present time would bring no loss, founders anticipate more profit by delaying purchases. Most of the buying during the week has been for prompt or nearby delivery—that is, during the balance of the first quarter of the year. During the past two days Radiator manufacturers, Pipe founders, Machinery manufacturers, Stove and general founders have come into the market for supplies ranging from 500 to 1500 tons each. In the aggregate, about 10,000 tons are under negotiation. Previous to this the principal buying has been done by Malleable founders. Most of the contracts of the week have been confined to lots ranging from 100 to 500 tons, 1000-ton lots being rare. Prices have not changed essentially, Southern Iron selling mainly on the basis of \$18.50 for No. 2 Foundry, Birmingham, but some sales have been made as high as \$19; No. 2 Soft on about the same basis. Malleable Foundry has been sold at \$23.50 to \$23.75 and Standard Bessemer at \$24 to \$24.50, Chicago. Small sales of Charcoal Iron have been made on the basis of quotations, but there has been but very little inquiry for Soft or Silvery Iron. The following are the prices current, f.o.b. Chicago, for deliveries during the first half of the current year, the outside prices being for the balance of the first quarter:

Lake Superior Charcoal.....	\$26.50 to \$27.50
Local Coke Foundry No. 1.....	24.00 to 25.00
Local Coke Foundry, No. 2.....	23.00 to 24.00
Local Coke Foundry, No. 3.....	22.00 to 23.00
Local Scotch, No. 1.....	24.50 to 25.00
Ohio Strong Softeners, No. 1.....	26.30 to 27.30
Southern Silvery, according to Silicon.....	26.15 to 27.15
Southern Coke, No. 1.....	23.85 to 24.35
Southern Coke, No. 2.....	22.85 to 23.35
Southern Coke, No. 3.....	21.85 to 22.35
Southern Coke, No. 1 Soft.....	23.85 to 24.35
Southern Coke, No. 2 Soft.....	22.85 to 23.35
Foundry Forge.....	21.35 to 21.85
Southern Gray Forge.....	20.35 to 20.85
Southern Mottled.....	19.35 to 19.85
Southern Charcoal Softeners, according to Silicon.....	25.85 to 27.85
Alabama and Georgia Car Wheel.....	28.35 to 28.85
Malleable Bessemer.....	23.00 to 24.00
Standard Bessemer.....	24.00 to 24.50
Jackson County and Kentucky Silvery, 6 to 8 per cent. Silicon.....	31.30 to 32.30

**Bars.**—The outlook for Bars, both Steel and Iron, is very satisfactory, there having been more business closed during the month of January than for any month of the preceding year. Railroads, car shops and wagon manufacturers have continued to purchase quite heavily of Bar Iron, sales during the week aggregating between 10,000 and 12,000 tons, for deliveries beginning in February and extending to July 1, and in not a few instances beyond July. Only a portion of these sales, however, were confined exclusively to Chicago. The market, too, is hardening, more remunerative prices having been obtained, sales being made mainly at 1.80c., with 5c. to 10c. higher for small lots for mill shipment. Further liberal sales of Soft Steel Bars have been made for deliveries extending to July 1, the aggregate sales of the two largest interests being upward of 12,000 tons. Last year the heavy buying of Steel Bars was in March, but this year it is anticipated that the heavy buying for 1903-1904 will not take place until close to the new year, which begins July 1. There is a fair demand for Hoops and Bands, and the market is steady. The following

are the prices current, f.o.b. cars Chicago, for mill shipment: Bar Iron, 1.80c. to 1.90c.; Soft Steel Bars, 1.76½c. to 1.86½c.; Hoops, 2.06c. to 2.16½c.; Angles, 1.86½c. to 1.91½c., base. The merchant trade is fair, and the market continues to harden, but prices are without essential change, as follows: Bar Iron, 2.15c.; Soft Steel Bars, 2c. to 2.25c.; Angles, 2.50c., and Hoops, 2.40c., base, from store.

**Structural Material.**—Temporarily, the market is quiet—that is, as far as new business is concerned. Specifications on contracts, however, continue quite liberal. The sold up condition of the mills keeps sellers indifferent as to new business for the time being. The following are the prices current at Chicago for mill shipment: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 2c. to 2.25c. There is a better inquiry for shipment from local stocks, and the market is firmer in tone. Quotations are as follows: Beams and Channels, 2¼c. to 2½c.; Angles, 2.25c. to 2.50c.; Tees, 2.30c. to 2.55c., at local yards.

**Plates.**—The tonnage offering is very heavy, despite the fact that little business can be taken for early shipment, which is discouraging to buyers and leads to premiums wherever shipments are possible. About 12,000 tons have been placed during the week for shipment extending into the third quarter of the year. The market is very strong, and prices remain unchanged, as follows, at Chicago for mill shipment: Tank Steel, ¼-inch and heavier, 1.75c. to 2c.; Flange, 1.85c. to 2.10c.; Marine, 2.10c. to 2.20c. There is an improvement in the demand for shipment from local yards, and the market is hardening in tone, but prices are without essential change, as follows: Tank Steel, ¼-inch and heavier, 2.25c. to 2.35c.; Tank Steel, 3-16-inch and No. 8, 2.30c. to 2.45c.; Flange, 2.50c. to 2.60c., all f.o.b. warehouse, Chicago.

**Sheets.**—There is an active demand for both Black and Galvanized, a considerable tonnage having been placed during the week, and the market is hardening, notwithstanding the keen competition. Contracts of 100 to 500 tons have been quite frequent, but the following prices have been shaded in some instances. Quotations for mill shipment, carload lots, f.o.b. Chicago, are as follows: No. 20, 2.50c. to 2.55c.; Nos. 22 and 24, 2.55c. to 2.65c.; No. 26, 2.65c. to 2.75c.; No. 27, 2.75c. to 2.85c.; No. 28, 2.85c. to 2.95c. Small lots from store continue to sell at from 15c. to 20c. over mill prices. Galvanized Sheets have continued in active demand, and the market is hardening in tone. Sales have been made on the basis of 75 and 10 and 5, Chicago, for mill shipment and 75 and 5 on the base price for local stocks.

**Cast Pipe.**—The high prices previously asked have discouraged large business in the West to a considerable extent, and have led to lower prices, one sale of 1000 tons of 6's to 12's having been made on the basis of \$32.60, Chicago, within a day or two. For round lots manufacturers quote, f.o.b. Chicago: 4-inch, \$34; 6-inch, \$33, and 8-inch, \$32 for Water Pipe, and \$1 per ton higher for Gas Pipe.

**Billets.**—The market is extremely dull, as far as round lots are concerned, but offerings are light and prices are entirely nominal at \$30.50 to \$31, f.o.b. Chicago, for either domestic or foreign Bessemer. Sales are reported on the Eastern seaboard at \$28, duty paid. In a jobbing way there have been sales of Open Hearth Forging Billets at prices ranging from \$35 to \$40, according to analysis, buyer and time of delivery. Several special lots have been sold in 100-ton lots at \$34 to \$35, f.o.b. mill, Chicago.

**Merchant Pipe.**—The activity noted in January has continued during the first ten days of February, there being quite liberal specifying on old contracts and considerable new business of moment. A firmer and more confident tone prevails than for many months. The following are the official discounts in carload lots, f.o.b. Chicago, base, random lengths, mill shipment:

	Steel Pipe.		Guaranteed Wrought Iron.	
	Black.	Galvd.	Black.	Galvd.
Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
¾ to 1 inch.....	66.35	56.35	63.35	53.35
1½ inch.....	68.35	58.35	65.35	55.35
2 to 6 inches.....	73.35	63.35	70.35	60.35
7 to 12 inches.....	71.35	61.35	68.35	58.35
Less than carloads, 12½ per cent. advance.				

**Boiler Tubes.**—The market is hardening, with an improved demand for delivery during the next few months. The following table of discounts is current for mill shipment, carload lots only, f.o.b. Chicago:

	Steel.	Iron.
1 to 1½ inches.....	43.35	38.35
1½ to 2½ inches.....	55.85	35.85
2½ to 5 inches.....	60.85	45.85
6 inches and larger.....	55.85	35.85
Less than carloads, 12½ per cent. advance.		

There has been a fair inquiry for shipment from local stocks, and the market is improving in tone, but without essential change in prices, the following being the schedule of discounts:

	Steel.	Iron.
1 to 1½ inches.....	35	35
1½ to 2½ inches.....	47½	32½
2½ to 5 inches.....	55	42½
6 inches and larger.....	47½	..

**Merchant Steel.**—There has been an improved demand for Spring Steel, and a number of renewals of contracts for Tool Steel, but as a rule Merchant Steel has been quiet, as far as new business is concerned, although there has been some improvement and specifying on previous contracts. For mill shipment prices are as follows: Smooth Finished Machinery Steel, 2.01½c. to 2.11½c.; Smooth Finished Tire, 1.96½c. to 2.11½c.; Open Hearth Spring Steel, 2.66½c. to 2.76½c.; Toe Calk, 2.31½c. to 2.46½c.; Sleigh Shoe, 1.86½c. to 1.96½c.; Cutter Shoe, 2.41½c. to 2.61½c. Ordinary grades of Crucible Tool Steel are quoted at 6½c. to 8c. for mill shipments; Specials, 12c. upward.

**Rails and Track Supplies.**—The feature of the week has been the active demand for relatively small amounts of Standard Sections, there being a number of sales of from 500 to 1000 tons, and one lot of 4000 to 5000 tons, at the aggregate being little less than 8000 tons. Nearly all the business was taken by local representatives of Eastern mills. The demand for Light Sections has continued very active, and premiums of \$5 and more per ton have not been infrequent. The official prices of Standard Sections, of course, remain at \$28, and for second quality at \$27, for mill shipments. Light Sections are quoted at \$35 to \$40, according to weight. Track Supplies have continued active and strong without essential change in prices. The following are the prices current: Splice Bars or Angle Bars, 2c.; Spikes, 2.50c.; Track Bolts, with Hexagon Nuts, 3.10c. to 3.25c.; Square Nuts, 2.95c. to 3.10c.

**Old Material.**—There has been some little improvement in the demand for Heavy Cast Scrap, and also for Stove Plate and Cast Scrap for eking out contracts, and with only moderate offerings. The market has improved in tone. In some instances buyers are obliged to pay premiums over quotations. There is still some inquiry for Heavy Relaying Rails, but business is light. The following are the prices current per gross ton, Chicago:

Old Iron Rails.....	\$24.00 to \$24.50
Old Steel Rails, mixed lengths.....	18.00 to 18.50
Old Steel Rails, long lengths.....	23.50 to 24.00
Heavy Relaying Rails.....	31.00 to 31.50
Old Car Wheels.....	24.00 to 24.50
Heavy Melting Steel Scrap.....	18.00 to 18.50
Mixed Steel.....	15.50 to 16.00

The following quotations are per net ton:

Iron Flash Plates.....	\$21.00 to \$22.00
Iron Car Axles.....	24.50 to 25.00
Steel Car Axles.....	23.50 to 24.00
No. 1 Railroad Wrought.....	19.50 to 20.00
No. 2 Railroad Wrought.....	17.50 to 18.00
Shafting.....	20.00 to 21.00
No. 1 Dealers' Forge.....	16.00 to 16.50
No. 1 Bushing and Wrought Pipe.....	14.00 to 14.50
Iron Axle Turnings.....	14.00 to 14.50
Soft Steel Axle Turnings.....	14.50 to 14.75
Machine Shop Turnings.....	13.50 to 14.00
Cast Borings.....	10.00 to 10.50
Mixed Borings, &c.....	10.50 to 11.50
No. 1 Rollers, cut.....	14.50 to 15.00
Heavy Cast Scrap.....	17.50 to 18.00
Stove Plate and Light Cast Scrap.....	13.50 to 13.75
Railroad Malleable.....	16.25 to 16.50
Agricultural Malleable.....	15.00 to 15.25

**Metals.**—There has been less activity in Copper, but the market has continued strong at full prices. Lake is quoted at 12½c. to 12¾c. in carload lots and 12¾c. in a jobbing way. Pig Lead, while less active, has been in good demand, the smelters finding it difficult to make shipments on contracts already received. The market remains firm, on the basis of 4.05c. in 50-ton lots, 4.07½c. in carload lots and 4.10c. in a jobbing way. Spelter has developed a less firm tone, and prices have receded slightly, Slabs being sold at 4.80c. in carload lots, Chicago. Sheet Zinc has remained firm at 6¼c. in lots of 600 lbs and over. Old Metals have met with a moderate demand, and remain firm, without essential change in prices, which are as follows: Heavy Cut Copper, 11c.; Red Brass, 11c.; Copper Bottoms, 10c.; Lead Pipe, 3.90c.; Zinc, 3.80c.

**Coke.**—There has been but little change in the market, the interrupted traffic being the governing force at present. Sales are made almost daily on the basis of previous quotations, Virginia Coke bringing \$9 to \$9.50 per ton and Connellsville Coke \$10 to \$10.50, on track, Chicago.

## Cincinnati.

FIFTH AND MAIN STS., February 11, 1903.—(By Telegraph.)

The Pig Iron market has been showing somewhat more life within the past week, and while there have been some sales of odds and ends at figures which sound low, yet beyond question the atmosphere is clearer and the pulse of the market stronger than it has been for several weeks. There is still a limited amount of Southern Iron to be had on the basis of \$18, Birmingham, for No. 2 Foundry. This is for prompt shipment; if later deliveries are asked the price is 50c. higher. Judging from the present outlook this price will hardly stand through the coming week, and with but few exceptions all Southern furnaces will be on the association basis of \$18.50. A few furnaces are asking \$19, but these are really not caring for sales at any price covering

the next few months' delivery. But little trading has as yet been done for the last half of the year. There is some preliminary motion in the field, which indicates the approach of a general buying movement in Foundry Iron. There have been some very good sales of Basic Iron for delivery in the Middle West. St. Louis is understood to have bought a round lot of this grade. While it is understood that the price for Mill Iron and kindred grades is pretty firm at \$17.50, Birmingham, yet the sale of several hundred tons of Mottled Iron is reported at \$16, same basis, and four months' delivery. This Iron is said to be some odd lots which the sellers were very anxious to dispose of and is not considered as a criterion in the establishment of the market. A small lot of Gray Forge is also reported at \$16.75, Birmingham. Freight rates from the Hanging Rock district, \$1.15, and from Birmingham to Ohio River points, \$3.25. We quote, f.o.b. Cincinnati, for delivery throughout the year, as follows:

Southern Coke, No. 1.....	\$21.75 to \$23.00
Southern Coke, No. 2.....	21.25 to 22.50
Southern Coke, No. 3.....	20.75 to 22.00
Southern Coke, No. 4.....	19.75 to 20.75
Southern Coke, No. 1 Soft.....	21.75 to 23.00
Southern Coke, No. 2 Soft.....	21.25 to 22.50
Southern Coke, Gray Forge.....	19.75 to 20.75
Southern Coke, Mottled.....	19.75 to 20.75
Ohio Silvery, No. 1.....	31.15 to 32.15
Lake Superior Coke, No. 1.....	25.15 to 25.65
Lake Superior Coke, No. 2.....	24.15 to 24.65
Lake Superior Coke, No. 3.....	23.15 to 23.65

### Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$27.75 to \$28.75
Lake Superior Car Wheel and Malleable.....	27.50 to 28.50

## Philadelphia.

FORREST BUILDING, February 10, 1903.

The situation in the Iron trade begins to show signs of clearing. There is a more spirited feeling, and while new business has not been specially important, there is so much work in sight that fears of any important reaction in prices are pretty well dissipated. Prices are about the same as last week, but the demand for early deliveries is such that there are no accumulations of stocks, and this, with a great many uncompleted orders, makes it comparatively easy to maintain prices. Nevertheless, if a decline of a dollar or two per ton could be arranged it would be an element of strength by decreasing the imports of foreign Iron, but with the higher prices for Ores, which are said to be in prospect, it is not to be expected that prices of Pig Iron can decline. The improved conditions as regards fuel and transportation are helpful, however, and while there is a very hopeful feeling in regard to general conditions there is still a lurking suspicion that Pig Iron prices will work lower, for which reason there is no disposition to buy for long deliveries unless at moderate concessions. No great anxiety is manifested in regard to the matter, however; the fact that a large volume of business is assured will make it a comparatively easy matter to adjust prices on a satisfactory basis. Foreign Iron is stronger, and as shipments are falling off it is not unlikely that spot Iron may stiffen up a little, but be that as it may, good Irons for delivery during February and March are not likely to go below to-day's figures. What the outcome may be as regards summer and fall deliveries is a problem yet to be solved, the available data being insufficient to warrant very confident opinions in regard to that matter.

**Pig Iron.**—The feeling in regard to Pig Iron is better than it has been for a good many weeks past. Prices are no higher, the volume of business is not specially large, but the conviction gains ground that the next three or four months—if not more—will be a period of considerable activity. The fuel situation gives promise of improvement, and freight facilities are also something better, so that some of the recent embargoes against normal conditions are gradually passing out of sight. Of course, we are not out of the woods yet, but there are many indications that point that way. Orders for finished products in all lines are large and increasing, so that it is pretty well assured that the demand for Pig Iron will be fully maintained. Prices are more or less uncertain. Some think they may recover the loss of the dollar or so which was made during the past few weeks, others think that they may decline to that extent, both sides apparently having some basis for their opinions. The former point to dearer Ores, Coke, Coal, transportation, labor and other items in the cost of production. The other side point to the fact that foreign Iron can be laid down in consumers' yards at \$1 or \$2 below the cost of American Iron, according to the points for delivery. An advance in the prices of American Iron would be so much additional premium on the foreign article, and this fact undoubtedly exercises a very wholesome influence for the time being. The controlling factor, however, will be supply and demand. If our furnaces can meet the full requirements of consumers prices must recede to a point that will prevent imports. On the other hand, if there is a shortage it must be made up from foreign Iron, whether prices are higher or lower. The action of importers denotes that they are rather inclined to expect lower prices in



the American market and better prices abroad. They are very chary about shipping unsold Iron. If they can sell cargo lots for 30 to 60 or 90 days' deliveries, they are willing to do business on the basis of about \$18 for Middlesbrough No. 3, \$20.25 for Bessemer and \$21.50 for Low Phosphorus. These prices are for cargo lots on dock, duty paid, cash against documents, but there is little or no unsold Iron coming in. For small lots delivered in consumers' yards higher prices are of course required to cover the additional expenses for handling, &c. American Iron (and foreign also) sells at about the following prices for deliveries in Philadelphia or at nearby points:

No. 1 X Foundry.....	\$24.00 to \$25.00
No. 2 X Foundry.....	22.25 to 22.75
No. 2 Plain.....	21.50 to 22.00
Gray Forge.....	20.50 to 21.00
Middlesbrough, No. 3.....	21.00 to 21.50
Scotch.....	22.50 to 23.50

**Billets.**—There is a firm undertone and prices are strong, with a considerable amount of business doing in special Steel, for which prices are adjusted accordingly. Foreign is quoted at about \$28, ex-ship, duty paid, for ordinary Steel, and American, \$31.50 to \$32.50, delivered in consumers' yards.

**Plates.**—Business is very active and mills have a great deal of work on their books besides a large amount in prospect. The supply of Coal is much improved, however, so that they are making a full output, and are in good shape to continue doing so. Western mills are also doing something in this market, but as they are not so well fixed for making prompt shipments they have to shade prices somewhat to secure recognition. The market is very steady, however, and with the exception named prices are well maintained at the following figures for Philadelphia delivery or its equivalent, viz.: Small lots, 2.10c.; carload lots, 1/4-inch and thicker, 2c. to 2.05c.; Universals, 2c. to 2.05c.; Flange, 2.10c. to 2.20c.; Fire Box, 2.25c. to 2.30c.; Marine, 2.30c. to 2.35c.

**Structural Material.**—Business in this department keeps up remarkably well, and without being overwhelmed with orders there is amply sufficient to keep them well employed. Deliveries can be made with a fair degree of promptness, although some sizes are subject to three or four weeks' delay. Prices steady and unchanged at the following figures, Philadelphia delivery: Beams, Angles or Channels, ordinary sizes, 1.73 1/4c. to 1.78 1/4c., carload lots, as a minimum.

**Bars.**—The demand is well up to the supply, although with more Coal and better railway facilities the capacity for production will be considerably increased, and there is some doubt whether there will be enough business to go around. Cost of production is increasing, and selling prices are too low in proportion. It is said that a strong effort will be made to secure an advance at the next monthly meeting of the Bar Iron Manufacturers' Association. Meanwhile quotations are the same as last week, viz.: 1.93 1/4c. to 1.98 1/4c. for Refined Iron and 1.73 1/4c. to 1.80c. for Steel, carload lots, as a minimum quantity.

**Sheets.**—The volume of business is considerably larger, and in view of the high cost of production manufacturers are figuring on higher prices for Sheets. For the present there is no change, but the feeling is very strong.

**Old Material.**—The market is improving, and in many articles prices have been advanced. No. 1 Railway Scrap commands \$24; Old Car Wheels, \$23; Cast Borings, \$11, and all others are firmly held. Quotations are more or less nominal, but bids and offers are about as follows for deliveries in buyers' yards:

Old Steel Rails.....	\$20.75 to \$21.25
Heavy Steel Scrap.....	20.25 to 20.75
Low Phosphorus Scrap.....	26.50 to 27.50
Old Steel Axles.....	25.00 to 26.00
Old Iron Rails.....	23.50 to 24.50
Old Iron Axles.....	29.00 to 30.00
Old Car Wheels.....	22.75 to 23.50
Choice Scrap, R. R. No. 1 Wrought.....	23.00 to 24.00
Country Scrap.....	20.00 to 21.00
Machinery Scrap.....	19.75 to 20.25
No. 2 Light Scrap.....	18.00 to 19.00
No. 2 Light (Ordinary).....	14.50 to 15.00
Wrought Turnings.....	16.00 to 16.50
Wrought Turnings, Choice Heavy.....	17.00 to 17.50
Cast Borings.....	10.75 to 11.25
Stove Plate.....	14.00 to 15.00

## St. Louis.

CHEMICAL BUILDING, February 11, 1903.—(By Telegraph.)

**Pig Iron.**—Business in the Pig Iron market continues very quiet, and little news of importance is current in trade circles. The situation in the matter of delivery seems to get more complex, and the furnaces are in the hands of the railroads in this section and are completely helpless to remedy existing conditions. Some of the railroads are now rigidly enforcing an order not to permit their cars to leave their line, and this serves to make additional difficulties for the sales agents in this city to overcome, in order to satisfy their trade north and west of the river. Prices are holding

firm on present basis, with but slight inquiry for shipments beyond the first half. We quote, f.o.b. St. Louis, as follows:

Southern, No. 1 Foundry.....	\$23.75 to \$24.75
Southern, No. 2 Foundry.....	22.75 to 23.75
Southern, No. 3 Foundry.....	22.25 to 23.25
Southern, No. 4 Foundry.....	23.75 to 24.75
No. 1 Soft.....	23.75 to 24.75
No. 2 Soft.....	22.75 to 23.75
Gray Forge.....	21.75 to 22.75
Southern Car Wheel.....	29.00 to 30.00
Malleable Bessemer.....	25.75 to 26.25
Ohio Silvery, 8 per cent. Silicon.....	32.50 to 33.50
Ohio Strong Softeners, No. 1.....	to .....
Ohio Strong Softeners, No. 2.....	to .....

**Bars.**—The jobbers are handling a very fair amount of business for Iron and Steel Bars, and the amount of new inquiry coming to hand is said to be of a satisfactory order. We quote from the mills: Iron Bars at 1.80c. to 1.90c.; Steel Bars at 1.85c. Jobbers quote Iron Bars at 2.25c. and Steel Bars 2.25c., in small lots from store, with 2.15c. quoted for large quantities.

**Rails and Track Supplies.**—Conditions are unchanged in this department of the market, and for all classes of Track Supplies the demand is heavy and well sustained. Prices remain firm, and we quote as follows: Splice Bars at 2.05c.; Bolts, with Hexagon Nuts, 3.15c. to 3.30c.; with Square Nuts, 3c. to 3.15c.; Spikes, 2.50c.

**Angles and Channels.**—The demand and inquiry for Small Angles and Channels shows an increase, and jobbers look for a good spring demand in these lines. For material of this class 2.50c., base, is asked.

**Pig Lead.**—The demand for Pig Lead shows no particular increase, but the volume of transactions is said to be of a very fair order. We quote Chemical at 3.97 1/2c. and Desilverized at 4c.

**Spelter.**—A firm basis of prices and a moderate volume of demand and inquiry are the conditions to be reported in the Spelter market. We quote 4.85c.

## Cleveland.

CLEVELAND, OHIO, February 10, 1903.

**Iron Ore.**—The Ore Association held another preliminary meeting here on Saturday to talk over the question of prices for the coming season. At the close the members said that nothing definite had been arrived at, and that, perhaps, several more meetings would be necessary to clear up all points. Besides prices the association is also discussing the possibility of limiting the output of Mesaba Ores during the coming year. The movement of Iron Ore away from the stock piles of the lake ports to the furnaces has been rather light because of the embargoes placed by the railroads, these including Iron Ore and other coarse and low grade freight. The furnaces, however, have not suffered as yet, having had a good supply on hand. The computations made lately have been that the supply of Ore on the lake docks will probably be vastly greater this spring than ever before in the history of the trade. It is understood that the Steel Corporation have enough Ore down the lakes, and either stored at their furnaces or on the docks along the lakes, to keep them running until August 1 without further supply from the upper lake region. Other furnaces are well supplied, but are not so favorably situated as this. Nothing has been said so far about the matter of freight rates during the summer in an official way at least. The Steel Corporation have practically consented to a higher rate this year than was paid last, and the independent shippers do not see how they can avoid meeting the imperative demand on the part of the vessel owners. The latter, since it has been understood that Ore prices are to be advanced, have been demanding \$1 a ton from Duluth to Ohio ports.

**Pig Iron.**—The market is strong, and shows a good many signs of activity. In Foundry grades the buying for spot delivery has been rather urgent, but tempered by the Coke situation. A good many of the foundries in this territory which have bought a good deal of Iron are unable to use it because they cannot get their full supply of Coke. On the other hand, a few who have been fortunate enough to get as much Coke as they need have been short of Iron. On the whole, the consumption of Pig Iron has been decidedly irregular. This has created a somewhat irregular demand for the material, and has enabled the stacks to come nearer to filling their orders than they could possibly have come had there been anything like a steady consumption of the material. The supply for spot delivery is quite limited, and the premiums offered on spot shipments have been an inducement to some of the furnaces to break over their rock ribbed policy about taking care of contracts first and have been the occasion for quite a number of sales. The practice is not general, however. The demand for material for forward delivery in the meantime has not been very heavy, but some consumers have placed liberal orders. Prices have held at \$23 for No. 2, first half delivery, Valley furnace, and \$21 for second half delivery. Material from Northern furnaces for spot delivery is bringing \$24 to \$25, Valley furnace, for No. 2. The sale of Bessemer is now confined to carload or 100-ton lots. The Steel Corporation have not

bought anything after the expiration of their first quarter contracts, and there has been no inquiry. The independent furnaces have about sold out their capacity for the first half at \$23, Valley furnace, and have covered a good deal of their capacity for second half at \$21. A little off Basic Iron goes at between \$20 and \$21 at the furnace, and some standard now and then sells at \$21 to \$22. The Coke supply is about as it has been. The railroads are in a hopeless state, and are able to keep Coke moving only by restricting many of the other articles received from foreign lines.

**Finished Iron and Steel.**—The market is waiting with considerable interest for some event which will decide the status of the Bar Iron price. Since the price went to 1.80c., Youngstown, the jobbers who had been getting 2c. out of stock pushed their prices up to 2.10c., and have been getting it without question and also have booked a good deal of business for the mills which they represent. There is, however, nothing binding in the agreement by which these prices are held. Bar Steel prices are holding up well and a good deal of business is being done in that particular line at 1.60c., Pittsburgh, for Bessemer, and 1.70c. for Open Hearth. The demand for Rails has held up well and some transactions have been reported. This week one of the railroads in this territory closed a contract for 1000 tons at the old association price of \$28, Pittsburgh, for Standard Rails. The demand for Light Rails has been quite strong. The demand for Sheets seems to be a little better than it has been. Spring trade seems now to be setting in and there are strong possibilities that before many weeks shall have passed the mills will have all they care to do to meet both the current and the future demands. Prices, while stronger, hold at the rock bottom level at which they have been for several months. There is no longer any talk of possible cuts from these prices in order to get business. The quotations continue to be: 3.10c. to 3.25c. for No. 27, out of stock, and 2.85c. to 2.95c. at the smaller mills for the same gauge. Galvanized Sheets are now bringing 3.70c. at the mill for No. 27. The demand for Plates has been only fair for spot delivery, the smaller mills getting 2c. for all they can produce. The activity among the larger mills seems to be entirely along the line of specification on former contracts. The Structural market has been rather brisk of late. Some good inquiries are made for material for the future and there is still a good sharp demand for spot shipment. A good many consumers failed to cover with contracts when the season was younger and are now feeling the lack of that material. This situation is expected to become worse when the building season opens. Prices do not change from 1.75c. to 1.85c. for spot shipment from smaller mills, 2.25c. out of stock, and 1.60c. at the larger mills.

**Old Material.**—The buying of Scrap has started again in a very lively manner. Sales during the past week have been heavy, all grades being included. Although the market is stronger, prices have not changed. Quotations are continued as follows: No. 1 Wrought, \$19.50, gross; Iron Rails, \$25.50, gross; Iron Axles, \$28, net; Cast Borings, \$12, gross; Car Wheels, \$22.50, gross; Heavy Melting Steel, \$19, gross; Old Steel Rails, \$20, gross.

## Birmingham.

BIRMINGHAM, ALA., February 10, 1903

The inquiry has broadened, the actual demand has perceptibly increased and the volume of actual transactions shows a marked improvement. Buying interests that have been holding off have finally come in, and in some instances have taken lots of considerable magnitude when delivery for the first half of the year could be obtained. It has been impossible to obtain the terms and prices concerning the more important sales, and the suppression of these particulars gives strength to the belief that concessions were made to induce business. There is very little doubt about it; in fact, the sales reported show that prices were on the average somewhat easier. Some were so situated that their offerings were placed at full market values, while others made the concessions necessary to effect sales. This week the question of increased freight rates will be before the railroads for decision, and their probable action is a factor in fixing prices. Those who fear that an increase will be exacted manifest a disposition to anticipate it by shaving values in advance, for it must come off the price of Iron if it is established. There will be a strong opposition to any increase and earnest protests will be made by the leading interests against it. But the probability is that the increase will be insisted upon and decided in favor of the railroads. That view of the situation has with some been an influential factor in naming prices; with others it has had no influence. The result is a continued irregularity in prices and an indisposition to make public the figures that were necessary to conclude transactions. Some of the business the past week came from points that seldom favor this district with orders, thus creating the suspicion that their usual sources of supply have run short and that it is forced by the run down condition of stocks. The experience of those of our local personnel who have lately been in the

West to investigate trade conditions prompts them to say that only dire necessity will force any free buying of Iron unless concessions are granted. And there are instances of buyers appearing here to look into the local situation and demonstrate the futility of prevailing prices and the necessity of lower values, but when their eloquence failed to drop the plum they accepted the situation and paid current value for what they took. The feeling is deep rooted among sellers that there will be a demand for all the Iron that supply can furnish. There have been strong efforts made to depress values, but without success, and as the situation grows stronger the less influence they have. Everything at this writing indicates that the usual spring buying has set in and that activity for a while anyway will prevail. The furnace practice of late has been very good and the output has run to the better grades. This has made the Forge grades run scarce to very scarce, and one can pick up for prompt or nearby shipment only small lots of these grades. There has been a fine inquiry for Basic Iron the past week, but no sales were reported. There has been, and there is now, considerable inquiry for the lower grades, but there has been such a difference between buyer and seller as to price that the trading has been insignificant, and some of the reports circulated as to trades and values have no foundation save "hot air."

The largest volume of business has been for delivery the first half of the year, but there has been some good business placed for the second half. The quotations for that delivery are a sort of rough guide as to price, and the warning is given that they are not infallible. In fact, sellers could say of the entire market, "We follow quotations as far as practicable and do the best we can." Quotations are given with the caution added that they are not infallible. As far as is practicable they are based on actual transactions. The conditions of delivery are influential factors in setting the price. No. 2 Foundry is quoted all the way from \$19.50 down to \$18.50, with sales at \$19.25, \$19, \$18.75 and at lower figures, which at present we can only guess. There was one sale of a round lot for extended delivery in April, May, June and July on the basis of \$19.25 for No. 2 Foundry. There were sales for prompt and nearby delivery on the basis of \$19.25 and \$19. There was a sale of a round lot for last half of the year delivery on the basis of \$18.75 for No. 2 Foundry, and there was some No. 2 Foundry offered at \$18.50 that wasn't sold, although it was for nearby delivery. Just "why this was thus" is one of the puzzles of the trade, but the fact illustrates the vagaries of the market. No. 1 Foundry is quoted at \$20, as is also No. 1 Soft. The former sold at \$20.25 and the latter at \$20. No. 3 Foundry is hard to quote accurately, as it is reported from \$18 to \$18.50, with sales at both prices. Delivery was the influential factor in fixing the value.

The value of Gray Forge is a bone of contention. It is wanted now and it will be wanted more as the days pass by. Sellers know that and as a rule are firm in their views concerning its value. One party announced that he was offered 20,000 tons at \$16, which he did not accept. There are other buyers who would cheerfully pay that value for it. Some sellers of this grade are holding it firmly at \$17.50, with unimportant lots offering at \$17 by other holders. No. 4 Foundry is as a rule held at 50c. above Gray Forge, but in some instances the price is the same for both grades. Some Silver Gray sold at \$21.50, but in no important quantity. These quotations are based on actual transactions and occurrences and are as reliable as can be obtained. There were sales of several lots by analysis, but the particulars are withheld. The information that the prices were very satisfactory is all that is vouchsafed concerning them. There is a good inquiry for Charcoal Iron, to meet which there is no available supply. Those making it say that \$25 could be readily obtained if they could accept orders.

The car situation is very unsatisfactory again and complaints are plentiful of the difficulty of obtaining cars for current wants. Some of the mines have been compelled to shut down at times because of their failure to obtain the cars needed, and shippers of Iron are growling, too, because of deficiency in this respect. Every prominent operator is behind on orders and by every mail they are prodded because of delay in shipments. To an inquiry as to the condition of the Coal business a prominent operator said to your correspondent: "Just say we are all run to death with more business registered and offering than we can care for. If we could get the cars we require we could keep up with our business." There has been a very fair inquiry for Coal properties and during the past week two new companies were incorporated, with a capitalization of \$50,000 and \$30,000, to mine Coal. In several of the companies that one might say were veterans in the business arrangements are being made to increase their output. One cause of the increased demand comes from local wants. The increase in our industries has increased the demand for Coal and Coke, while the outside area of demand is on the constant increase, as is shown by the yearly output as given in the annual reports of the State Mine Inspector. In spite of the difficulties that beset the mining industries last year the official report shows an increase in output amounting to 1,300,000 tons, and this



increase will be topped this year. It is simply a question of obtaining the necessary labor. New "finds" of Coal and Iron Ore are being reported and they are leading to investigation. There is no trouble now to promote a meritorious proposition. Capital is on the *qui vive* for promising opportunities.

To some fields that have lacked rail facilities extensions and spurs are being built to aid in their development, and the area of our available resources is being constantly augmented. The next generation will in this district be heirs to a pretty well developed territory and one most thoroughly prospected.

### German Iron Market.

ESSEN, January 31, 1903.

There has been some revival in the German Iron market since our last report. Both consumers as well as the large middlemen have taken considerable quantities of Pig Iron. Business has become more extensive also in manufactured Iron and Steel, and more particularly in Beams and in Bars. Prices, however, still continue very low, and in most of the branches bring about a loss. Therefore the mills show little disposition to contract far ahead at current rates. On the other hand, it must be admitted that the temper of the market shows but little confidence, so that everything depends upon whether foreign countries and notably the United States continue to purchase on the same scale for the next few months. If shipments to the United States were suddenly to drop off, the improvement of the German Iron market just started would undoubtedly suffer a serious reaction.

There has been a little more animation in domestic Iron Ores, and the mines of the Siegen district will be able to run fuller during this quarter than they have in the past. Raw Spathic Ore is quoted at 10.20 marks, and calcined Spathic Ore 14 marks per ton, f.o.b. mine. Nassau Red Hematite, with about 50 per cent. Iron, costs about 10 marks. Among the foreign Ores Somorrostro remains firm at 16 to 16.50 marks, delivered, furnace. As already noted, there is more animation in the Pig Iron market, and quotations are as follows: No. 1 Spiegel Eisen, 10 to 12 per cent. Manganes, 66 to 67 marks, f.o.b. Siegen; Special Mill Iron, 56 marks, f.o.b. Siegen; German Bessemer, 64 to 65 marks. Basic Pig, 55 marks, delivered, steel works, Rhenish Westphalia; Luxemburg Mill Iron, 44 marks, f.o.b. Luxemburg; English No. 3 Foundry, 66 to 66.50 marks, f.o.b. Ruhrort; Luxemburg No. 3 Foundry, 50 marks, f.o.b. Luxemburg; German No. 1 Foundry, 65 to 66 marks; No. 3, 62 marks, f.o.b. furnace.

The Old Material market is easy. It is true that consumption is somewhat livelier, but offerings are on a more extensive scale, and the demand for America has declined. Heavy Cast Scrap is quoted 52 to 53 marks; Melting Scrap, 42 to 43 marks; Open Hearth Heavy Scrap, 50 to 52 marks; Wrought Iron Heavy Scrap, 57 to 58 marks, and Old Iron Rails, 70 to 72 marks, delivered, rolling mill.

So far as Steel is concerned a good deal of business is being done, although some cautious buyers are closing only for a month to come. Foreign buyers continue to make inquiries, and prices are therefore held a little higher. Domestic prices are unchanged at 77.50 marks for Thomas Ingots and Heavy Blooms, 82.50 marks for Blooms and Heavy Billets, 90 marks for Ordinary Billets and 92.50 for Slabs.

The Bar Iron market has been very active since our last report, and large purchases have been made at 98 marks per ton by dealers. Considering the fact that Billets are quoted at 90 marks, this figure is ruinous. The heavy sales have led the mills to put up figures so that to-day Steel Bars could not be obtained at less than 106 to 108 marks. The business in Hoops and Bands has also been livelier, but the official prices of 122.50 to 127.50 marks per ton are still frequently cut. The struggle in the Pipe trade, which has continued unabated during the last two years, still characterizes the situation. In sympathy with the light business in the Boiler trade Boiler Tubes are weak, while there is more doing in Gas Pipe. Quite recently very considerable sales of Gas Pipe have taken place, which seems to indicate a satisfactory condition in the building trade for the current year. It is true that we must still count with American competition in the Gas Pipe trade, and this is most notable in Southern Germany. For the first quarter very considerable contracts have been closed for Beams, and further sales are progressing. Naturally specifications are coming in rather slowly, as they always do at this season of the year. In Structural Material the business has become livelier and prices are somewhat firmer. Universal Plates and Structural Iron of the ordinary sizes are quoted 110 to 112.50 marks. The situation has improved in Wire Rods, and some larger export contracts have been taken. The market is very much more active in Drawn Wire, both so far as the home trade is concerned and also in the export trade, in which large sales have been made. The domestic price for Ordinary Steel Drawn Wire is 120 to 122.50 marks, while Puddled Drawn

Iron Wire is quoted 135 to 137.50 marks. The December report of the German Wire Nail Syndicate states that there has been a lively demand almost during the whole of the month in all parts of Germany. Orders were received in such volume that the works have sufficient employment for the next three months. The demand for export is not making further progress, but some large contracts have been made for delivery to some foreign countries. The base price for Wire Nails for the home market is 155 to 160 marks.

A large amount of export trade is in the hands of the Rail mills, and negotiations for further lots are progressing. For the fiscal year beginning April 1 the Prussian State railroads will give out orders for 187,900 tons of Rails, which are put in the estimates at an average of 119 marks per ton, and 80,000 tons of Track Material. Besides there are to be Iron cross ties for 921 km. of road, and Rails for the renewal of 2109 km. The market for street Rails is comparatively feeble. We quote Mine Rails, 100 to 102.50 mark; Light Rails, 110 to 112.50 marks; Heavy Rails, 120 marks and Girder Rails, 135 to 140 marks.

There has been considerably more life in the Plate trade and Steel Boiler Plates are quoted 150 marks, while Ordinary Steel Plates are 120 to 125 marks. In the Sheet trade there has been more activity, and there is quite a considerable export trade. The price for the home market is unchanged at 137.50 marks less a discount to dealers, depending upon volume of order.

### Belgian Iron Market.

BRUSSELS, January 20, 1903.

The merchants in London and in other countries having reached the end of last year with slight stocks have been under the necessity of reasorting. They have now placed orders with the Belgian mills. The systematic withdrawal from the market whose object was to reduce prices naturally had to have an end, particularly since Finished Iron and Steel had reached prices so low that a further reduction became literally impossible. Since the beginning of the year, therefore, there has been an improvement emphasized by the fact that the Germans have raised their prices to some extent. As an indication of greater strength the fact may be stated that German competition is less severe, so that our works have been enabled to take a larger volume of orders on the export market. It remains to be seen whether this improvement is temporary also, or whether it will be lasting. Unfortunately the great undertakings which are now going forward in the United States are not being paralleled in this country. England, our best customer, is still impoverished by the Transvaal war, and it will take several years before business again revives. All that we can hope for is that the improvement is maintained until the coming spring which is always a period of greater consumption. If this proves to be the fact there is little doubt that the works may succeed in holding their prices at figures corresponding to the cost of raw materials and may be able to reap some profit.

Pig Iron still continues firm. Ordinary Mill Iron is sold on the basis of 57.50 francs per ton, delivered. The smelters of Luxemburg ask 50 francs at furnace, which would be about 58.50 francs at the mill, counting freight and duty. Thomas Pig is quoted 63.50 francs, and Luxemburg Foundry 60 francs. As the result of a better demand the Athus furnaces have raised their prices 1 franc per ton for Forge Iron for delivery during the second quarter of 1903, but it is doubtful whether the rolling mills will care to commit themselves for so long at the new prices. As a matter of fact, the blowing in of several blast furnaces in this country and in the Meurthe and Moselle region has resulted in throwing upon the market considerable quantities of Pig Iron, which is not favorable to a maintenance of prices. The Société de Providence has already blown in one furnace, Athus will put in one also, and de Saintignon at Longwy, the Chiers furnaces and the Esperance Works at Louvroil have also blown in furnaces. The home demand for Pig Iron has not only improved, but there are more export orders also. We hear of exports to the United States. Thus in December out of a total of 10,700 tons exported from this country the United States alone took close to 9000 tons. In Steel Blooms, too, the United States has bought considerable quantities. This has led to a rise in prices to the extent of 2 francs per ton, so that Blooms are now quoted 95 francs; Ingots, 90 francs, and Billets, 100 francs. On the whole, Belgium does very little in the way of exporting crude Steel. On the contrary, our works are importing considerable quantities, the tonnage taken from Germany and from Luxemburg amounting to about 10,000 tons per month.

Scrap Iron is selling close to 70 francs per 1000 kg. Steel Scrap is very much sought for in England and for the United States at prices varying between 57 and 59 shillings per ton.

So far as Finished Iron and Steel are concerned the situation is good, generally speaking, and is constantly improving a little. The German, French and Belgian manufacturers of Beams have recently met at Brussels, and have decided to

continue the present agreement. An understanding has been reached as to the territory of each of the three countries; the German mills will protect prices in France, and Belgium will not sell in Germany. The majority of Belgian Beam mills have sold their entire production for the first quarter of 1903 at about £4 8s., f.o.b. Antwerp. New orders are only accepted at £4 10s. for fairly early delivery and at £4 12s. for later delivery. A large tonnage has been placed for the United States and for Great Britain at prices 2 or 3 shillings below the lowest figure. The building industries show some animation in this country, and to judge from the numerous inquiries, the season promises to be good. Base price for the home market on Beams is 130 francs. The tendency is also better for Iron and Steel Bars, in which there have been important transactions for Japan and British India. The price of £5 2s. 6d. for Merchant Bars has been definitely reached for export, although only a month ago the middlemen could buy down to £4 17s. 6d.; the advance therefore is about 5 shillings, and even more because those works which have taken the largest volume of orders are now asking £5 4s. Steel Bars are £5 to £5 2s., f.o.b. Antwerp, and 135 francs for the home market.

There is little change to note in the Sheet trade. Galvanizers are placing a good many orders with our Sheet mills, and for No. 20 Wire gauge there is being quoted £7 5s. for Galvanized Sheets, and for No. 24 Wire gauge £8 1s. Our Plate mills are getting orders only from day to day. Large business is altogether too scarce to have any effect upon prices. Rails are quoted £5 3s. The Wire Rod mills are enjoying a good flow of orders at this time, but prices remain bad. On Nail Rods the basis of business is 142.50 to 145 francs, a price which does not correspond with the current prices on Billets.

The situation has improved in the Wire Nail trade, orders from the home market having been received and the demand for export being better. In the construction shops an improvement is ardently desired.

## Pittsburgh.

(By Telegraph.)

PARK BUILDING, February 11, 1903.

**Pig Iron.**—Reports that the United States Steel Corporation were in the market for a round tonnage of Bessemer Iron for second half of the year delivery have been denied. The Steel Corporation will not likely buy any more Iron until the furnaces have delivered what is already due on old contracts. But another report is current that the independent blast furnaces in the Mahoning and Shenango valleys are about to consolidate. This is also denied by a prominent blast furnace owner. Bessemer Pig Iron for delivery this side of July continues very scarce and several of the leading Steel concerns would probably buy Iron for the next four or five months' delivery if they had a reasonable certainty of getting it. We note heavy sales of Basic Iron, 40,000 to 50,000 tons, at prices ranging from \$20.50 to \$20.75, Valley furnace. It is said that a good deal of outside Basic Iron is coming into this market. Forge and Foundry Iron are fairly active, quite a little tonnage of Foundry being sold. We quote Bessemer Iron at \$20.50 to \$21, at furnace, for delivery up to July. For second half of the year delivery \$20 at furnace could probably be done. Forge Iron is \$20.50 to \$20.75, and Northern No. 2 Foundry \$22.50 to \$23, Pittsburgh, depending on deliveries wanted.

**Steel.**—The Steel market is very strong and Bessemer Billets are all of \$30, and Open Hearth, \$31, Pittsburgh. Some heavy sales of Open Hearth Slabs aggregating 30,000 to 40,000 tons have recently been made.

(By Mail.)

The freight situation is steadily improving, and the congestion is slowly being removed. The Pennsylvania and Baltimore & Ohio railroads have both lifted the freight embargos which they recently established and freight is moving more satisfactorily. Coke shipments continue erratic, the furnaces getting good shipments on some days and on other days no Coke is received. The natural result of this is that blast furnaces in the Mahoning and Shenango Valleys are running very spasmodically, and this restricts output of Pig Iron very much and keeps it scarce. The market on Pig Iron is very firm, furnaces quoting \$20.50 to \$21 on Bessemer Iron for shipment up to July. There is a good inquiry for Foundry Iron, and Northern No. 2 brings \$22.50 to \$23.50, Pittsburgh, depending on deliveries wanted. Forge Iron is somewhat quiet at about \$20.50, Pittsburgh. The independent Sheet mills are still at work through a committee on their project of securing a regular supply of Sheet Bars, and if plans now under way go through successfully the position of the outside Sheet mills, as regards regular supply of Steel, will be much stronger than heretofore. The general situation in the Iron trade seems to be considerably stronger than a week ago, and there have been good sized purchases of Basic Iron for delivery in this district at prices ranging from \$21 up to \$21.50, Pittsburgh. There is a

heavy demand for Chill Iron for open hearth purposes, and it is being shipped into this district from outside furnaces. The Steel market is firm, Bessemer Billets being all of \$30, and Open Hearth, \$31, Pittsburgh. Demand for Plates, Structural Steel, Tin Plate, Pipe and Wire products is very heavy. A better inquiry is also reported for Sheets and Bars, which have been somewhat quiet for some time.

**Muck Bar.**—The market on Muck Bar is quiet, and prices have eased off to some extent. Best makes of domestic Muck Bar are now quoted at \$32.50, Pittsburgh.

**Structural Material.**—Some good sized contracts have recently been placed, and other large jobs are in the market. Active work will soon be started on the Jones & Laughlin bridge across the Monongahela, while the Wabash is planning a bridge across the Allegheny River, to have two spurs, which, if carried through, will require a very heavy tonnage. Work on the Wabash bridge across the Monongahela is now being actively pushed. The American Bridge Company are rebuilding the Baltimore & Ohio bridge at Benwood, and have recently closed several other large contracts. Indications are that the Structural concerns will have all the work they can handle through this year. The mills are making somewhat better delivery, but the railroad situation is still bad, and interferes seriously with shipments. We quote as follows: Beams and Channels up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Tees, 1.65c.; Steel Bars, 1.60c.; half extras, at mill; Universal and Sheared Plates, 1.60c. to 1.85c.

**Rods.**—We note a fairly active demand for Rods, Bessemer being held at \$35.50 to \$36, and Open Hearth about \$37, Pittsburgh. It is understood that the contracts for Rods of the Union Steel Company and Sharon Steel Company have been assumed by the American Steel & Wire Company, who will market the Wire products of these two concerns in the future.

**Steel Rails.**—Very little new tonnage is being placed and the mills are so filled up with orders that no contracts, except for shipment in second half of the year, could be accepted. For this reason a recent contract for 10,000 tons for extreme Western delivery went to a foreign mill, as domestic mills could not make deliveries wanted. We quote at \$28, at mill for Standard Sections.

**Hoops and Bands.**—A good deal of tonnage is being placed and the market is firm. We quote Cotton Ties at 95c. a bundle at mill. Steel Hoops from Bessemer stock are 1.90c. to 250-ton lots and over, and 2c. in carloads, at mill. Bands are quoted at 1.60c. up to No. 12 gauge, with extras as per Steel Bar Card. For Open Hearth stock \$2 a ton advance is charged.

**Bars.**—The refusal of the mills rolling Steel Bars to make a differential in price to large buyers is regarded as a very wise action, but, of course, is not relished by heavy consumers, who expected to be favored with a lower price. It is expected that some of the leading Implement makers will soon come into the market and place large contracts. Some figuring is already being done. Tonnage in Iron Bars is good and the market is firm. We quote Iron Bars at 1.80c. in carloads and 1.85c. in small lots, half extras, as per National card. We quote Steel Bars at 1.60c., at mill. All specifications for less than 2000 lbs. of a size subject to the following differential extras: Quantities less than 2000 lbs., but not less than 1000 lbs., 0.10c. per lb. extra. Quantities less than 1000 lbs., 0.30c. per lb. extra, the total weight of a size to determine the extra regardless of length.

**Spelter.**—The Spelter market is fairly active, without change in prices. We quote Prime Western Spelter at 4.95c. to 5c., Pittsburgh.

**Plates.**—There is no let-up in demand for Plates, and the mills are booking a heavy tonnage, much of it for delivery later in the year. The leading Plate mills are practically out of the market as sellers for first six months, and have booked a large tonnage for delivery in second half. Some heavy contracts have been placed by boat building concerns for delivery in the summer months. From 1.75c. up to 1.90c. is still being obtained for small lots of Plates for prompt shipment. We quote: Tank Plate, ¼-inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3c. Plates more than 100 inches wide, 5c. extra per 100 lbs. Plates 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms net cash in 30 days.

**Sheets.**—Some of the mills report a slightly better inquiry for Sheets, but the situation is still unsatisfactory. It is believed, however, that demand will soon show material improvement. The independent mills are still at work on a scheme for securing a regular supply of Sheet Bars, and report they are making progress with their plans. There is no



change in prices and we quote: Nos. 22 and 24 Black Sheets, box annealed, one pass through cold rolls, at 2.45c.; No. 26, 2.55c.; No. 27, 2.65c., and No. 28, 2.75c. These prices are for carloads and larger lots, buyers charging the usual advances on small lots from store. On Galvanized Sheets we quote Nos. 26, 27 and 28 at 75, 10 and 2½ to 75, 10 and 5 per cent. off for carloads and larger lots. In net prices these are equal to about 3.25c. for No. 26, 3.42c. for No. 27 and 3.70c. for No. 28. These prices apply only on carloads and larger lots and are f.o.b. mill. On less than carloads jobbers charge the usual advances.

**Skelp.**—There is a fair inquiry for Skelp, but prices are without change. We quote Grooved Iron Skelp, ordinary sizes, at 1.90c.; Sheared, 1.95c. to 2c.; Grooved Steel Skelp, 1.95c. to 2c., Pittsburgh, or 2 per cent. off for cash in 30 days.

**Boiler Tubes.**—Nothing of special interest to note. A fair amount of tonnage is being placed, and on old contracts the mills are filled up for several months ahead. Prices are fairly firm, but are being shaded on good orders. Discounts are as follows:

BOILER TUBES.		
Steel.		Per cent.
1 to 1½ inches.....		45
2¾ to 3 inches.....		62½
1¾ to 2¼ and 6 to 13 inches.....		52½
Iron.		
1 to 1½ inches.....		36½
2¾ to 3 inches.....		45½
1¾ to 2¼ and 6 to 13 inches.....		35½
CASING.		S. and S.
		Per cent.
2 to 3 inches.....		58
3¼ to 4 inches.....		60
4¼ to 12½ inches.....		63

**Merchant Pipe.**—Report has it that a large contract for Line Pipe for the Russian oil fields is about ready to be placed, and will likely go to Pittsburgh mills. The leading interest are filling a large order for Pipe for the St. Louis Exposition, and on one day recently 123 carloads were shipped from the McKeesport Works. The People's Natural Gas Company, now owned by the Standard Oil Company, will probably build another gas line from the West Virginia fields into the Pittsburgh district. It will require a very heavy tonnage. Demand for Pipe continues large, and the leading mills are well filled up, so much so that there is a firmer tone in prices, and some recent low quotations have been withdrawn. Pittsburgh basing discounts, which are now being pretty generally observed, except on the smaller sizes, are as follows:

	Merchant Pipe		Full weight	
	Pipe, Steel or Iron.	guaranteed Wrought Iron.	Pipe, Steel or Iron.	guaranteed Wrought Iron.
Blk. Galv.	Blk. Galv.	Blk. Galv.	Blk. Galv.	Blk. Galv.
¾, 1 and 1½.....	68	58	65	57
2.....	70	60	67	59
2½.....	75	65	72	62
3 to 6.....	73	63	70	60
7 to 12.....			72	62

NOTE.—Orders for less than carloads will be charged at 12½ per cent. advance. Extra and Double Extra Strong cut lengths, lower random discounts by 10 per cent. net for 6 feet and longer, and 15 per cent. net for 3 to 6 feet.

**Coke.**—While shipments of Coke in the past week showed some improvement, they are still far from being satisfactory. Last week's shipments from the Connellsville region to the Mahoning and Shenango valleys were the best for some time. So far this week the movement of Coke has been fairly satisfactory. The output of Coke in the Upper and Lower Connellsville region last week was about 280,000 tons. Prices of Furnace Coke on contracts are from \$3.50 to \$4, and on Foundry Coke about \$5 a ton. For prompt shipment Furnace Coke brings \$4.50 to \$5 a ton and Foundry \$6 to \$7 a ton.

**Old Material.**—The market on Iron and Steel Scrap continues quiet as far as sales go, but prices are a little firmer. Dealers quote about as follows: Heavy Melting Stock at \$21 to \$21.50; Short Steel Rails, \$21.50 in gross tons; Steel Rails for rerolling, \$23 to \$23.25; Cast Iron Borings, \$11.75 to \$12; No. 1 Heavy Busheling Scrap, \$18 to \$18.25, net tons; No. 1 Railroad Wrought Scrap, \$21, net tons; Car Wheels, \$24 to \$24.25, gross tons; Old Iron Rails, \$25 to \$25.50, gross tons.

Rogers, Brown & Co., Pig Iron and Coke merchants, have strengthened their representation in Pittsburgh by the engagement of James R. Darragh as sales agent. Mr. Darragh has been identified with the Pig Iron trade in that district for many years. In order to secure the additional room needed, Rogers, Brown & Co. have leased offices in the new Farmers' Bank Building, and expect to remove about April 1.

The fire loss of the United States and Canada for the month of January is estimated by the New York Journal of Commerce at \$13,166,000, as compared with \$15,032,000 in January, 1902, and \$16,574,000 in January, 1901.

## New York.

NEW YORK, February 11, 1903.

**Pig Iron.**—The market has been rather quiet, there having only been some moderate sales of Low Phosphorus Pig for Western delivery. A fair business is being done in Scotch Pig Iron, which consumers are again taking kindly to. No. 1 can be purchased in moderate lots at \$21 to \$21.50. We quote for prompt to early delivery: No. 1 X Foundry, \$24 to \$24.50; No. 2 X Foundry, \$22.25 to \$22.60; No. 2 Plain, \$21.50 to \$22. Tennessee and Alabama brands, in New York and vicinity, No. 1 Foundry, \$24 to \$24.50; No. 2 Foundry, \$22.75 to \$23.25; No. 3 Foundry, \$21.75 to \$22.25.

**Cast Iron Pipe.**—The Eastern foundries continue to enjoy a large volume of business, and they are now getting filled with work extending well into the spring months. In some cases they are sold up to June, especially on small sizes. The Western demand is also better and inquiries aggregating over 4000 tons have come from the Northwest. The city of Philadelphia will ask for bids on 37,800 tons of Water Pipe in the near future. Prices in the East have advanced and \$34.50 per gross ton for 6 to 12 inch, at tidewater, now seems to be about the market.

**Steel Rails.**—The season for the placing of contracts for electrical lines is approaching and quite a number of inquiries have come into the market, notably in the Central West. We continue to quote \$28 at Eastern mill for Standard Sections.

**Finished Iron and Steel.**—The demand for Structural Shapes has been unusually good this winter, in marked contrast with the ordinary course of this branch of trade in January and February. The open weather has, of course, been conducive to the prosecution of building operations, while the use of Steel in moderate sized structures continues to increase, thus augmenting the consumption. No important contracts are reported in either buildings or bridges. Reports have been persistently current that the Pennsylvania Railroad Company had definitely contracted for the construction of a bridge over the East River at Hell Gate to connect the New York, New Haven & Hartford system with the Long Island Railroad, but these reports seem to have no substantial basis. The bridge will be undertaken in time and when the contract is placed it will be a large one, as about 31,000 tons of Steel will be required. Plates are in good demand, but the volume of business is smaller. Eastern mills are making better deliveries, as they are now well supplied with fuel, and the Eastern railroads are handling freight more satisfactorily. The Western mills are taking some business in this locality, but Eastern mills adhere rigidly to their established price of 2c. at mill. A larger trade in Bars is reported, with some good sized contracts placed for long deliveries. We quote at tidewater as follows: Beams, Channels and Zees, 1.75c. to 2c.; Angles, 1.75c. to 2c.; Tees, 1.80c. to 2c.; Bulb Angles and Deck Beams, 1.90c. to 2.25c. Sheared Steel Plates are 2.10c. for Tank, 2.20c. for Flange, 2.35c. to 2.40c. for Fire Box. Refined Bars are 1.95c. to 2c.; Soft Steel Bars, 1.80c. to 1.90c.

**Old Material.**—The general demand has considerably improved and a decidedly larger volume of business is reported for some classes of material. Old Car Wheels are quite scarce and in strong demand. Among the week's transactions is a sale of several hundred tons for export. It is not unlikely that our quotations for Wheels may be found under the market. Rerolling Steel Rails are also very scarce. The largest source of supply in the East will not offer a single pound this month, and it is understood that none will be offered for several months, possibly not for the entire summer, as the company intend to use them for their own construction purposes. A sale of 600 tons of Heavy Relaying Rails is among the week's transactions. Several good trades are reported in Rolling Mill Scrap for future delivery, some of which are the largest in several months. Cast Scrap is not in large supply and prices are very firm. We quote, f.o.b. cars, vicinity of New York, per gross ton:

Old Iron Rails.....	\$23.50 to \$24.00
Old Steel Rails, long lengths.....	21.00 to 21.50
Old Steel Rails, short pieces.....	18.75 to 19.00
Relaying Rails, heavy sections.....	29.00 to 30.00
Relaying Rails, lighter sections.....	31.50 to 32.00
Old Car Wheels.....	22.50 to 23.00
Old Iron Axles.....	29.00 to 30.00
Old Steel Car Axles.....	24.50 to 25.00
Heavy Melting Steel Scrap.....	18.75 to 19.00
No. 1 Railroad Wrought Scrap Iron.....	22.00 to 22.25
Track Scrap.....	18.25 to 18.75
Wrought Pipe.....	15.00 to 15.50
Ordinary Light Iron.....	11.00 to 12.00
No. 1 Machinery Cast Scrap.....	19.00 to 20.00
Stove Plate.....	14.00 to 15.00
Wrought Turnings, delivered at mill.....	16.75 to 17.00
Cast Borings, delivered at mill.....	10.25 to 10.50

The annual banquet of the Engineers' Society of Western Pennsylvania will be held in the Hotel Schenley in Pittsburgh on February 27. A reception will be held at 7.45 p.m., and the dinner will follow an hour later. This society now has over 1000 members.

## Metal Market.

NEW YORK, February 11, 1903.

**Pig Tin.**—Stocks here are large, and a good quantity of the metal is afloat. Consequently the speculators who have been advancing the market for some time were not able to lift the price of spot very much higher than it was last week. In futures their operations had a more telling effect. Business from consumers was very light. Closing prices to-day were as follows: Spot, 29.20c. to 29.30c.; February, 29.25c. to 29.35c.; March, 29.30c. to 29.37½c.; April and May, 29.30c. to 29.50c. The London market advanced to £133 for spot and £133 10s. futures. The closing price to-day was somewhat lower, however, with £132 7s. 6d., and £132 17s. 6d. Arrivals thus far this month have aggregated 1580 tons, and it is calculated that there are 3855 tons afloat.

**Copper.**—The market is still under the manipulators' spell. The attempt to boom Copper shares both in this market and abroad and incidentally to advance the price of Copper, as an aid, has continued throughout the week. Consumers are buying very cautiously, as they hold present values to be fictitious, and consequently trade is rather dull. There was a little business transacted last week for home consumption, a little for exportation, and some Copper was bought by domestic speculators. The aggregate was, however, not very large. Closing prices to-day were as follows: Lake, 12.75c. to 12.95c.; Electrolytic, 12.75c. to 12.85c.; Casting, 12.37½c. to 12.75c.; Standard, 12.12½c., nominal. The London market showed considerable activity, especially in future deliveries, which sold at quite a discount from spot. Best Selected was advanced very rapidly. The market closed £57 5s. for spot, £56 12s. 6d. futures, and Best Selected, £61 10s. Exports have been very small this month, amounting at present to but 2278 tons.

**Pig Lead.**—No new features have entered the situation, the market being quiet and uninteresting. The American Smelting & Refining Company still quote on a basis of 4.10c. for futures and 4.12½c. spot. London is unchanged at £11 8s. 9d. It is said that further complications have prevented the consummation of the merger of large Lead companies. We understand that it is now necessary for the stockholders of the National Lead Company to hold a meeting and alter the by-laws of the Company, so as to enable the proposed holding company to acquire control.

**Spelter.**—Early in the week under review further advances in price were made. Since then, however, the market has been very quiet and values have receded somewhat. At this writing the market is steady and firm, spot being quoted here 5c. to 5.05c. St. Louis quotes 4.85c. and London is unchanged at £20 7s. 6d.

**Antimony.**—Is unchanged. Cookson's is quoted at 8¼c. to 8½c., Hallett's at 7c. to 7¼c. and other brands at 6¼c. to 6½c.

**Nickel.**—No change is noted. Large quantities down to ton lots are now quoted at 40c. to 47c. per lb., according to size and terms of order. Smaller lots are quoted as high as 60c., according to quantity.

**Quicksilver.**—In sympathy with the decline in London this market has declined to \$47 per flask of 76½ lbs. each in lots of 50 flasks or more. London has declined to £8 12s. 6d.

**Tin Plate.**—Quotations are unchanged, being based on present official prices of \$3.60 per box of 14 x 20 100-lb. Cokes, f.o.b. mill, and \$3.79, New York delivery. These prices, it is understood in the trade, will hold until April. The Swansea market recovered 1½ pence to 12 shillings 1½ pence.

**An Advance in Coal Rates.**—Rates on bituminous coal from Western Pennsylvania to Eastern tidewater will be advanced 15 cents a ton. The raise is to become effective in a few days. The present rate from the soft coal regions of Western Pennsylvania to Philadelphia is \$1.10 and to New York \$1.45 a ton. The advance, therefore, would make the rate \$1.25 and \$1.60 a ton. This increase will bring great additional earnings to the Baltimore & Ohio and the Pennsylvania, which carry the bulk of the coal between Pittsburgh and the East. On its lines east of Pittsburgh and Erie the Pennsylvania carried last year 26,000,000 tons of bituminous coal.

**Carnegie Improvements.**—PITTSBURGH, PA., February 11, 1903.—The Carnegie Steel Company, National Steel Company and American Steel Hoop Company have decided to make some extensive additions to existing works, and also to build some new plants. The Car-

gie Steel Company will break ground at once for a 140-inch plate mill, to be built at the Homestead Steel Works. This plate mill will have a monthly capacity of about 12,000 tons, and will roll plates up to 132 inches wide. The National Steel Company will start work at once on a fourth new blast furnace at the Ohio works, Youngstown, Ohio. The stack will be 85 x 22 feet, and will have a daily capacity of about 600 tons of Bessemer iron, which will be used in the Bessemer steel plant of the Ohio works at Youngstown. The American Steel Hoop Company will build a 10-inch continuous mill at the upper Union mills at Youngstown, Ohio. Work on all these new plants will be started at once, and they will be pushed to completion as fast as possible.

## Trade Publications.

**Brick Conveyors.**—The Barney brick conveyor system produced by the Jeffrey Mfg. Company of Columbus, Ohio, consists principally of three parts: The endless carrier chain, the swinging basket and the overhead track. The endless chain, which is of the coil pattern, is made in sections usually 4 feet in length. These connect with special roller carriers, to which the baskets are attached. The chain operates over special pocket sheave wheels, the whole being driven from the head of the conveyor. The individual roller carriers are made with a grooved wheel to operate in a single iron bar runway. This runway is supported from hangers upon wooden trestles, and is supplied with curved connections, where it is necessary to go around a curve. For convenience in handling brick an adjustable frame is used along the point where the railroad cars are to be loaded. This frame can be moved backward or forward without stopping the conveyor.

**Forged Crank Shafts** are made by Wyman & Gordon of Worcester, Mass., in a wide range of sizes. These forgings are treated by a special process, which increases the tensile strength of the steel and produces the greatest toughness that can be given to forgings. They show a four-throw crank that was bent cold upon itself without showing the slightest flaw.

**Roller Bearings.**—A catalogue by the Mossberg & Granville Mfg. Company of Providence, R. I., contains much valuable data concerning the use of roller bearings and shows their application to many of the machines built by the company. Comparatively speaking, the saving in power of roller bearings over plain bearings increases in proportion to the pressure. For instance, in supercalender stacks, rolling mills and rubber grinders, where the pressure is enormous, the saving in power by the use of roller bearings is from 40 to 60 per cent., while on a small line shaft, where the pressure is unnoticeable, the saving would not be much over 5 per cent. The avoidance of wear by the use of these bearings is as important in some machines as the saving of power.

Wyman & Gordon of Worcester, Mass., have just issued another pamphlet of their short story series. This time they tell, in a most interesting way, of the principal events in the life of Benjamin Franklin.

A catalogue by the Garvin Machine Company of Spring and Varick streets, New York, describes the various sizes of plain milling machines built by them. Their No. 13½ machine is suitable for fine manufacturing, tool making and jobbing work. The back gearing enables the tool to carry heavy cuts and also doubles the number of speed changes.

**Disposition of Sharon and Union Products.**—PITTSBURGH, PA., February 11, 1903.—(By Telegraph.)—In the future the output of the plants of the Sharon Steel Company at Sharon and the Union Steel Company at Donora, Pa., will be handled by constituent interests of the United States Steel Corporation as follows: The National Steel Company will handle the product of the blast furnaces, open hearth works, blooming mill and universal plate mill of the Sharon Steel Company. The American Tin Plate Company will handle the tin plate and the American Sheet Steel Company the sheets made by the Sharon Steel Company. The Carnegie Steel Company will handle the product of the blast furnaces and open hearth plant of the Union Steel Company. The American Steel & Wire Company will handle the output of rods and wire products of both the Sharon and Union plants.



## The New York Machinery Market.

NEW YORK, February 11, 1903.

Since the representatives of the New York machinery houses returned from Montreal, where they secured the orders previously referred to from the Locomotive & Machine Company, Limited, of Montreal, there has been considerable comment in the trade over the great possibilities offered by the Canadian field. The trip offered food for a good deal of thought and brought about a general awakening to the industrial activity now prevailing in the Dominion, and which it is believed is but in its earliest stages. The consensus of opinion is that the trade at large have been neglecting a field that offers magnificent opportunities. The new locomotive shop, for which upward of \$300,000 worth of machinery has just been purchased, is now regarded as but a taste of what is to follow, or rather as an "eye-opener." The representative of one of the large machine tool houses in this city, who has followed the Locomotive & Machine Company's proposition from the outset, and who is an acknowledged expert on the subject of shop equipment, stated to a representative of *The Iron Age* that the new locomotive shop would prove the best equipped locomotive works, from a standpoint of economical production, in existence. As a thoroughly modern machine shop, he said it will rank with anything on the American continent.

Heretofore the import duty of 25 per cent. on machinery has been considered as prohibitive, and little attention has been given the Canadian market. At present, however, the shops located across the border are literally filled with work, and demand is coming in on them so heavily that they cannot hope to cope with it. The Bertram Mfg. Company of Dundas, Ont., are easily the largest builders of machine tools in Canada. As we mentioned last week, this concern captured the largest slice of the Locomotive Company's orders. These orders will keep the Bertram shop filled to its capacity for some months. In the meantime a very heavy demand for machinery is expected from several large corporations doing business in the vicinity of Montreal. Last week mention was made in this column of the intention of the Grand Trunk Railway systems to construct great shops in Quebec. It is now said in the trade that the Canadian Pacific Railway, who have extensive shops at Montreal, intend building an entire new shop system, and it is believed that this project will mature prior to that of the Grand Trunk Railway. The report has it that the Canadian Pacific shop will incur the expenditure of almost \$500,000. The plans are said to be pretty well on toward completion. E. N. Bender is general purchasing agent for the company, with offices at Montreal.

Several large machinery builders of the United States have already built fine new shops in Canada and the matter is being considered by others. Among the concerns who are now operating Canadian plants are the General Electric Company, Rand Drill Company and the Ingersoll-Sergeant Drill Company.

It is predicted that the industrial development in the vicinity of the Niagara Falls will continue on an extensive scale. Canadian manufacturers are holding high hopes for a large export trade, believing themselves to have an advantage over this country in the English, German and other European markets. It is quite evident that the New York machinery representatives who have investigated the matter have arrived at the conclusion that there is a strong movement on foot toward the erection of thoroughly modern plants throughout the Dominion, in anticipation of this export trade. For the equipment of these shops the machine tool builders of the States stand a very favorable chance, despite the heavy duty. Canadian machine tool shops are not operated on the same scale as those in this country. Almost all of the tools are built to order, the practice of production in large lots being an unknown factor. With such conditions it is not a difficult matter to fill the shops far ahead, so as to necessitate the importation of tools in case of any considerable demand.

The only large sized machine tool proposition coming to the trade during the last week was issued by the Baltimore & Ohio Railroad Company, E. H. Bankard, purchasing agent, Baltimore, Md. The complete specifications include some \$50,000 worth of tools, principally medium and smaller sizes, although there are a few fairly large ones included. The tools are for installation in the shops at Calvert, where extensive improvements are under way. The specifications have just been issued, so it is not expected that purchases will be made for several days.

The trade have had an eye open for some time for the machinery specifications of the New York Central & Hudson River Railroad for their new shops at West Albany, N. Y. The list has not been issued as yet. D. Fairchild, purchasing agent, with offices in New York, is in charge of the matter.

A good sized machinery equipment has just been purchased by the Turbine Electric Truck Company of 74 Cortlandt street. This concern are equipping a plant at Rutherford, N. J., for the building of heavy motor wagons. The De Laval Steam Turbine Company are interested in the

project, as the vehicles are to be equipped with their turbines. Each wagon will contain a complete electric plant consisting of a steam boiler using oil as fuel, a steam turbine, electric generator and motors and condenser and accessories. The vehicle itself is to be built of pressed steel. Extensive developments are looked for in the trade in connection with this company.

The Fairbanks Company announce that they have assumed control of the Dupont power hammer, formerly made by the Dupont Mfg. Company. The hammers are now being manufactured at the Fairbanks Company's St. Johnsbury Works, where the Howard patent saw table and saw sharpening machine are also being made. These goods will hereafter be sold as the Fairbanks power hammer and the Fairbanks saw table and Fairbanks saw sharpening machine.

The International Steam Pump Company placed orders for six Pond radial drills, with 6-foot arms, from the Niles-Bement-Pond Company. Four of these are for the Worthington shop and two will be consigned to the Laidlaw Dunn Gordon plant, at Cincinnati. They also purchased a 20-ton electric traveling crane from Pawling & Harnischfeger of Milwaukee.

The Uniform Steel Company, who recently completed a large plant at Rahway, N. J., suffered a serious loss by fire last week, which will necessitate the purchase of considerable machinery. The machine shop and power plant were entirely destroyed.

The United States Foundry & Sales Company of 830 Park Row Building, New York, have acquired the foundry of Richardson & Morgan of South Norwalk, Conn., and are about to build a machine shop, for which they are now buying equipment, including machine tools, air compressor and electric traveling crane, and an industrial railway. They are also in the market for an engine boiler, cupola, blower and hoist. The company were recently incorporated with a capital stock of \$250,000. J. A. Richardson is president and general manager, and M. A. Rourke secretary and treasurer of the company.

J. G. White & Co., Limited, of London, and 29 Broadway, New York, have just secured the construction contract for an extensive electric railway system to be built in Holland, by the Netherlands Tramways Corporation. The latter concern have recently been organized with a capital of \$3,500,000. J. G. White & Co. are now at work on the plans and will soon be in the market for equipment. Among the directors are W. Caryl Ely, who is president of the International Traction Company of Buffalo, N. Y.; G. L. Boissevain, a member of the banking firm of Kean, Van Cortlandt & Co.; James M. Edwards, of the banking firm of R. D. Wilson & Co.; F. S. Smithers and N. W. Halsey, senior members of the banking firms bearing their names, all of New York, and J. G. White, president of J. G. White & Co., Limited, of London.

L. H. McIntyre, consulting and contracting engineer of 16 Broad street, New York, is purchasing the equipment for the Sheffield Company, who are building a new electric power station for street railway service at Sheffield, Tenn. He has just awarded the engine order to Woolston & Brew of 39 Cortlandt street. This order included one cross compound 450 horse-power condensing engine, direct connected to a 300-kw. generator, and a 375 horse-power engine, direct connected to a 250-kw. generator.

The C. O. Bartlett & Snow Company of Cleveland, Ohio, have just received a large order for fertilizing machinery from the West Rand Fertilizing Company of Krugersdorp, Transvaal, South Africa. They have also received orders for conveyors for conveying 1750 barrels of clinker per day, from the Bronson Portland Cement Company, Bronson, Mich., and for one 1000-barrel conveyor, from the Egyptian Portland Cement Company, Detroit, Mich.

Thomas H. Hollis has been appointed purchasing agent of the Dilworth Coal Company and the Pittsburgh Dredging & Construction Company, both of Pittsburgh. Mr. Hollis will be pleased to receive lists and discounts from the various trades supplying goods to concerns like the above mentioned.

**The Clairton Steel Company.**—The Clairton Steel Company of Pittsburgh now have ten of their 12 50-ton open hearth furnaces at Clairton, Pa., in operation and are turning out very close to 1000 tons of steel per day. The company are building three blast furnaces at Clairton, and expect to have No. 1 stack ready for blast in April, No. 2 in June and No. 3 in August. Work on the building of these blast furnaces has been held back very much by delays in getting material and equipment. Each furnace will have a daily capacity of about 500 tons of iron.

The offices of the Steel Car Forge Company of Pittsburgh have been removed from Bank of Commerce Building to Rooms 614-617, Lewis Block, in that city.

## Iron and Industrial Stocks.

A fair degree of activity characterized the stock market for the greater part of the week. The industrial stocks which have been the greatest favorites among speculators were dealt in quite liberally. Greatly increased interest was taken in United States Steel stocks, particularly on Thursday, when a decision rendered at Trenton, N. J., in the Hodge suit in favor of the corporation became known to the public. On that day one-fifth of the total sales on the New York Stock Exchange was in the two Steel issues, largely in the common, advancing prices about  $\$1\frac{1}{2}$  above the low point of the preceding day. While prices generally have been firm with narrow fluctuations, Railway Spring common advanced during the week from  $32\frac{1}{2}$  to  $36\frac{1}{2}$ , and the preferred from 85 to 89.

**Dominion Iron & Steel Company.**—The Dominion Iron & Steel Company report that the earnings for the month of December show a deficit of \$8142 after proportional charges and preferred stock dividend requirements. According to the official statement, the earnings of the Dominion Coal Company were \$155,655, and of the steel company \$44,851, making a total of \$200,506. The expenditures were: Bond interest, \$33,108; general interest, \$8872; Dominion Coal lease, \$133,733, and sinking fund, \$4167, making a total of \$179,480. The balance of net earnings was \$21,026, and as the preferred stock dividends of the steel company amounted to \$29,108, there is a deficit of \$8142. For the eight months earnings were as follows: Earnings of coal company, ten months, \$1,977,328; earnings of steel company, eight months, \$309,886; total net earnings, \$2,287,215. The expenditures were: Bond interest, \$265,376; general interest, \$112,225; coal lease, ten months, \$1,333,333, and sinking fund, eight months, \$33,333; total charge of \$1,744,268. The balance of net earnings was \$542,948. The preferred stock dividend for eight months was \$233,334, leaving a surplus of \$309,613.

**Magnolia Metal Company.**—The Magnolia Metal Company, 511-513 West Thirteenth street, New York, are offering for subscription at par \$200,000 7 per cent. cumulative preferred stock, preferential as to assets; the issue being made to increase the working capital. William Leslie, chartered accountant, of New York, reports that the company earned during the five years and eight months from March 1, 1897, to November 1, 1902, an average yearly net profit of at least \$40,000, and that the net profits for the first eight months of the present fiscal year have been something over \$50,000. He reports that on November 1, 1902, the surplus of assets over liabilities exclusive of good will, patents and trade-marks was \$200,193.

Proxies have been received by the officials of the Standard Chain Company, at Pittsburgh, for practically all the stock to be voted at the annual meeting in Jersey City, N. J., on February 17, when action will be taken to reduce the capital stock of the concern from \$3,000,000 to \$1,500,000.

It is reported that Henry C. Frick of Pittsburgh has purchased all the bonds of the Clairton Steel Company remaining unsold in the hands of one of the Pittsburgh trust companies who underwrote the issue.

**Dividends.**—The Westinghouse Electric & Mfg. Company of Pittsburgh have declared the usual quarterly dividend of  $1\frac{3}{4}$  per cent. on the assenting stock, payable February 15.

The Emlenton Natural Gas Company, Emlenton, Pa., have declared an extra dividend of 5 per cent. The company pay 12 per cent. per annum regular dividend.

**A Large Order for Flooring.**—The Youngstown Iron & Steel Roofing Company, Youngstown, Ohio, manufacturers of Buckeye flooring, have received a contract for the flooring for the Mill Creek Bridge, to be built at Youngstown, Ohio, the superstructure having been placed with the American Bridge Company. Before finally deciding upon the question the county commissioners went to the Dry Run Bridge, which has been erected and in use for more than seven years and across which two lines of street car tracks are run, and to all intents a place where this floor has received its most severe test. They went under the bridge, and from the most exposed parts of the floor, and where it would be most liable to have given away by reason of use and exposure, they cut from the lower part of the floor pieces of the Buckeye trough. It was found on examination that this material, although it had been in use for more than seven years, was in substantially the same and as good condition as when it was placed there at the erection of the bridge.

In January the American Steel & Wire Company exported about 5400 tons of wire and wire nails to foreign countries.

## January Fluctuations in Iron Stocks.

The following table shows the extent of transactions and the fluctuations in quotations of the stocks of iron and steel companies in the month of January, with the dates on which the highest and lowest prices on each stock were realized:

Cap'l issued.	Sales.	High-Date	Low-Date
est. Jan.	est. Jan.		
\$17,701,500 Am. Bicycle Co., com.	23,700	$\frac{3}{4}$	$\frac{1}{2}$ 22
9,294,900 Am. Bicycle Co., pref.	11,300	1	$\frac{5}{8}$ 28
9,500,000 Am. Bicycle Co., bonds	9,845	$42\frac{1}{2}$	6 35 30
41,233,300 Am. Can. com.	10,650	$11\frac{1}{2}$	3 9 $\frac{1}{2}$ 23
41,233,300 Am. Can. pref.	13,150	$50\frac{1}{2}$	19 47 28
29,000,000 Am. Car & F'dry, com.	153,600	$41\frac{1}{4}$	19 35 $\frac{1}{2}$ 3
29,000,000 Am. Car & F'dry, pref.	8,300	93	6 90 $\frac{1}{2}$ 21
24,100,000 Am. Loco., com.	36,900	$30\frac{3}{4}$	7 28 $\frac{1}{2}$ 24
25,000,000 Am. Loco., pref.	5,000	95	8 93 26
45,000,000 Cambria Steel.	18,800	$26\frac{3}{4}$	3 25 $\frac{1}{2}$ 29
7,000,000 Centr. Foundry, com.	1,700	$3\frac{3}{4}$	29 2 $\frac{1}{2}$ 13
7,000,000 Centr. Foundry, pref.	2,650	$16\frac{1}{2}$	29 14 $\frac{1}{2}$ 7
17,000,000 Col. Fuel & Iron.	19,200	$82\frac{1}{2}$	6 73 $\frac{1}{2}$ 20
25,000,000 Crucible Steel, com.	13,350	$21\frac{1}{4}$	30 19 28
25,000,000 Crucible Steel, pref.	10,050	$85\frac{1}{4}$	7 84 5
1,975,000 Diamond State Steel.	2,700	1	16 $\frac{1}{2}$ 6
2,368,100 Empire I. & S., com.	500	13	31 10 $\frac{1}{2}$ 13
2,281,400 Empire I. & S., pref.	500	47	19 41 8
15,000,000 Inter. Pump, com.	500	$45\frac{1}{8}$	28 44 27
8,850,000 Inter. Pump, pref.	500	85	20 85 26
8,396,000 Natl. Enamel., com.	5,500	35	31 33 18
15,441,800 Natl. Enamel., pref.	300	92	31 85 7
4,449,800 Otis Elevator, com.	2,350	$44\frac{1}{2}$	9 43 23
6,350,000 Otis Elevator, pref.	700	$99\frac{1}{2}$	17 97 5
10,750,000 Pa., new, com., Phila.	200	$51\frac{1}{2}$	15 50 31
16,500,000 Pa., new, pref., Phila.	1,400	$93\frac{1}{2}$	6 91 $\frac{1}{2}$ 30
12,500,000 Pressed Steel, com.	48,800	$65\frac{1}{2}$	29 62 3
12,500,000 Pressed Steel, pref.	9,625	$94\frac{1}{4}$	31 93 8
10,000,000 Railway Spr., com.	8,150	35	8 31 $\frac{1}{2}$ 24
10,000,000 Railway Spr., pref.	2,900	87	2 85 28
27,191,000 Rep. I. & S., com.	53,900	$22\frac{1}{2}$	19 20 $\frac{1}{2}$ 13
20,306,900 Rep. I. & S., pref.	13,400	$79\frac{1}{2}$	9 77 $\frac{1}{2}$ 2
7,500,000 Sloss-Shef. S. & I., com.	13,600	$68\frac{1}{2}$	23 59 $\frac{1}{2}$ 2
6,700,000 Sloss-Shef. S. & I., pref.	1,400	$93\frac{1}{2}$	29 90 $\frac{1}{2}$ 2
20,000,000 Tenn. Coal & Iron.	62,200	65	6 59 $\frac{1}{2}$ 2
1,500,000 Tidewater Steel.	1,700	5	19 4 $\frac{1}{2}$ 17
12,106,000 U. S. C. Pipe, com.	1,800	14	6 13 $\frac{1}{8}$ 5
12,106,000 U. S. C. Pipe, pref.	200	53	5 52 14
510,361,300 U. S. Steel Co., com.	398,670	39	7 36 $\frac{1}{2}$ 21
508,511,200 U. S. Steel Co., pref.	219,500	$89\frac{1}{2}$	7 86 $\frac{1}{2}$ 2
8,425,000 Vir. I. & C., com.	6,800	37	19 33 $\frac{1}{2}$ 3
10,000,000 Vir. I. & C., 5 % bonds.	238,750	$79\frac{1}{2}$	19 69 2
1,500,000 Warwick I. & S.	3,500	$5\frac{1}{2}$	28 5 24
Allis-Chalmers, com.	2,000	$19\frac{1}{2}$	10 18 $\frac{1}{2}$ 20
Allis-Chalmers, pref.	600	86	21 86 21
Am. Steel F'dries, com.	2,300	$19\frac{1}{2}$	13 16 9
Am. Steel F'dries, pref.	1,200	68	2 65 31

## The American Seeding Machine Company.

Negotiations for the consolidation of seven leading manufacturers of agricultural implements are approaching consummation. The companies to be merged are chiefly builders of seed drills and seeders, as follows: Superior Drill Company, Springfield, Ohio; Hoosier Drill Company, Richmond, Ind.; Empire Drill Company, Shortsville, N. Y.; Brennan & Co. (Southwestern Agricultural Works), Louisville, Ky.; Dowagiac Mfg. Company, Dowagiac, Mich.; P. P. Mast & Co., Springfield, Ohio, and Bickford & Huffman Company, Macedon, N. Y.

It is proposed to style the new company the American Seeding Machine Company and to incorporate under the laws of New Jersey with a capital of \$15,000,000. Half of the capitalization will be 7 per cent. cumulative preferred stock and half common. A cash working capital of \$2,500,000 is to be provided. It is reported in financial circles that the entire issue of stock has been subscribed for on a basis of \$100 for each two shares, one preferred and one common. We are informed that the formal transfer of properties is to be completed by March 1. President Bookwalter of the Superior Drill Company of Springfield, Ohio, is mentioned for the presidency of the new company. William M. Barnum of the firm of Simpson, Thatcher, Barnum & Bartlett, attorneys, 25 Broad street, New York, and Frank B. Smith of Pittsburgh, have been the promoters and are attending to the details of organization.

In January the National Tube Company of Pittsburgh exported about 1600 tons of pipe to European ports.



## Pig Iron Production Decreased.

The transportation difficulties have had quite a marked effect upon the production of pig iron during January, so that the total output of the anthracite and coke furnaces of the country was only 1,472,788 gross tons, as compared with 1,537,245 gross tons in December. Nearly all the leading districts in the West participated in this reduction of output. In view of the probability that with improvement may be expected this month we have noted the capacity at the output of January. The difficulties in securing a steady supply of materials has gone even so far that some furnaces have had trouble with their limestone.

The weekly capacity of the furnaces in blast on February 1 compares as follows with that of the preceding periods:

	Total capacity per week. Gross tons.	Coke capacity per week.	Charcoal capacity per week.
February 1, 1903.....	343,111	335,339	7,772
January 1.....	353,800	346,073	7,727
December 1, 1902.....	343,817	336,617	7,200
November 1.....	337,559	330,110	7,449
October 1.....	345,948	337,837	7,211
September 1.....	335,189	328,243	6,946
August 1.....	336,465	328,745	7,720
July 1.....	350,890	343,250	7,640
June 1.....	344,748	337,492	7,256
May 1.....	352,064	337,627	6,437
April 1.....	337,424	331,140	6,284
March 1.....	323,028	316,039	6,989
February 1.....	332,045	325,440	6,605
January 1.....	298,460	291,992	6,468
December 1, 1901.....	324,761	317,358	7,403
November 1.....	320,824	313,775	7,049
October 1.....	307,982	300,538	7,444
September 1.....	299,861	293,256	6,605
August 1.....	303,847	297,269	6,578
July 1.....	310,950	303,793	7,157
June 1.....	314,505	306,391	7,514
May 1.....	301,125	293,915	7,210
April 1.....	296,676	288,766	7,910
March 1.....	292,899	284,825	8,074
February 1.....	278,258	269,923	8,335
January 1.....	250,351	243,254	7,097
December 1, 1900.....	228,846	222,067	6,779
November 1.....	215,304	207,381	7,923
October 1.....	223,169	214,921	8,248
September 1.....	231,778	223,551	8,227
August 1.....	244,426	236,131	8,295
July 1.....	283,413	274,921	8,492
June 1.....	296,376	288,771	7,605
May 1.....	293,850	286,956	6,894
April 1.....	289,482	281,644	7,838

We estimate the production, month for month, by districts as follows:

	Monthly Pig Iron Production.				
	September, 1902.	October, 1902.	November, 1902.	December, 1902.	January, 1903.
New York....	28,053	30,105	28,912	34,829	33,071
New Jersey....	10,617	8,375	14,218	17,432	17,378
Schuylkill....	34,417	31,915	41,129	46,527	49,007
Lehigh.....	34,224	28,661	39,580	53,853	58,687
Susq. and Leba- non.....	41,371	37,849	38,225	39,945	41,147
Pittsburgh....	348,362	380,261	359,662	368,851	360,795
Shenango....	118,827	112,823	93,186	110,363	111,098
W. Penn.....	85,152	83,827	77,326	89,767	93,777
Md., Va. and Ky.....	80,337	84,759	89,074	85,357	79,390
Wheeling....	71,897	80,791	59,149	71,990	53,907
Cent. and No. Ohio.....	107,522	113,842	109,263	106,032	90,757
Mahoning V....	105,482	112,978	107,838	124,658	107,510
Hanging Rock and Hocking Valley.....	21,668	27,026	27,656	31,289	26,707
Ill., Wis., Minn., Mo. and Col.	181,830	189,970	172,485	170,708	170,880
Alabama.....	118,669	116,337	137,280	142,281	136,907
Tennessee and No. Carolina	30,172	41,422	37,887	43,363	41,768
	1,418,600	1,480,941	1,432,879	1,537,245	1,472,788
Charcoal pig..	28,834	33,037	31,544	33,679	34,348
Totals.....	1,447,434	1,513,978	1,464,423	1,570,924	1,507,136

These figures show that there has been a falling off in the production in January, as compared with December, in nearly all the principal districts in the Central West.

The status of the charcoal furnaces was as follows:

Location of furnaces.	February 1.		January 1.	
	Number of stacks.	Number in blast. per week.	Number in blast. per week.	Capacity in blast. per week.
New England.....	7	2	183	2
New York.....	3	2	476	1
Pennsylvania.....	5	1	23	2
Maryland.....	1	1	117	1
Virginia.....	3	1	40	1
Ohio.....	8	2	85	3
Kentucky.....	3	0	0	0
Tennessee.....	1	0	0	0
Georgia.....	4	3	811	3
Alabama.....	5	4	1,212	5
Michigan, Missouri and Wisconsin.....	11	10	4,625	9
Texas.....	4	1	100	1
Washington.....	1	1	100	1
Totals.....	56	28	7,772	20

During January there were blown in the fourth Crane and the second Lock Ridge in the Lehigh Valley, one Duquesne in Pittsburgh, one New York in the Hocking Valley and Calumet in Chicago. There were put out one Shenango, one Pennsylvania Steel, one Crozer, one Mingo, one Steelton and South Chicago and Philadelphia of the Sloss Company. In some cases furnaces have been put out for repairs, which might have been delayed, but it has been deemed wiser to do so now when transportation difficulties embarrass regular operations.

Location of furnaces.	February 1.		January 1.	
	Number of stacks.	Number in blast. per week.	Number in blast. per week.	Capacity in blast. per week.
New York.....	14	9	7,468	9
New Jersey.....	6	4	3,647	4
Spiegel.....	2	2	277	2
Pennsylvania:				
Lehigh Valley....	27	24	13,252	22
Spiegel.....	1	1	127	1
Schuylkill Valley..	14	13	11,066	13
Lower Susquehanna	10	7	4,774	8
Lebanon Valley....	12	6	3,639	6
Pittsburgh District	32	32	83,420	32
Spiegel.....	3	3	3,174	2
Shenango Valley...19	16	16	24,248	16
West. Pennsylvania	21	17	21,175	17
Maryland.....	5	3	4,457	4
Wheeling District...11	9	9	12,172	10
Ohio:				
Mahoning Valley...15	14	14	24,276	13
Cent. and Northern	14	12	21,310	12
Hocking Valley....	3	2	452	1
Hanging Rock.....11	10	10	5,576	10
Illinois.....	19	14	27,000	14
Spiegel.....	1	1	1,128	1
Minnesota.....	1	1	938	1
Wisconsin.....	5	5	3,708	5
Missouri.....	1	1	472	1
Colorado.....	3	2	3,668	2
Spiegel.....	1	1	264	1
The South:				
Virginia.....	23	17	11,361	19
Kentucky.....	7	5	2,108	6
Alabama.....	40	33	30,500	34
Spiegel.....	1	1	251	0
Tennessee.....	16	15	9,187	14
Georgia.....	1	0	0	0
North Carolina....	2	1	244	1
Totals.....	336	280	335,339	281

### Stocks.

The position of furnace stocks, sold and unsold, as reported to us, was as below on February 1, as compared with the preceding months, the same furnaces being represented as in former months. This does not include the holdings of the steel works producing their own iron:

	Sept. 1.	Oct. 1.	Nov. 1.	Dec. 1.	Jan. 1.	Feb. 1.
Anthracite and Coke.....	63,666	62,651	62,261	85,606	92,560	106,297
Charcoal.....	15,873	13,250	9,597	8,689	7,335	13,344
Totals.....	79,539	75,901	71,858	94,295	99,895	119,641

The Austin Coal & Coke Company, Austin, W. Va., have 83 ovens in operation and 217 additional ovens building. C. W. Jackson is president; Archer Brown, vice-president, and Mark T. Cox, secretary and treasurer. Rogers, Brown & Co. have been appointed sole selling agents for the company.

## Briquetting Coal Dust.

BY FRED. SAWARD, NEW YORK.

The enormous accumulation of waste material in the form of dust or culm in the coal mining industry has for many years led to experimentation looking to its use as fuel, but these efforts have not hitherto resulted in a satisfactory solution of the problem. Within the last few years the United States has come to the front as the greatest coal producing nation in the world. The greater production has necessarily meant a greater accumulation of waste material, and while, to a certain extent, ways and means have been devised for partially utilizing this waste, there is a very large quantity obtainable at a low price. The production of coal in the United States for the year 1901 was approximately 96,000,000 short tons of anthracite and 223,000,000 short tons of bituminous coal. Out of this vast quantity there is something which may be turned to use which has hitherto been classed as waste.

There were many suggestions from Europe during the period of the anthracite miners' idleness that briquettes could be made use of to supply the need of coal consumers, and our consular agents in cities where such fuel is used were industrious in sending over descriptions of these briquettes and of the machinery for making them. As the source of a supply of raw material was cut off by the idleness at the mines, nothing could be done to carry out these suggestions, while as to making use of the soft or bituminous coal in this form, that was out of the question, as there is no waste in this grade of coal at a time when fuel sold as high as \$6 a ton at the mines in Pennsylvania. Now that conditions are once again becoming normal it may be that we shall see something done in this country with the briquette idea; in fact, such a project, initiated by C. Heydebrand, is now on foot, a plant having been installed at 163 Washington street, New York. But the work will be done with machinery made by H. S. Mould in Pittsburgh, and not imported from Germany, as was only recently suggested by our Consul-General at Berlin. The experimental stage of this American enterprise seems to have passed, and there is now an opportunity for the display of American ingenuity in this line, and the dust of anthracite or the slack of bituminous mining may be utilized to advantage. By the proper mixture of "binders" and with powerful pressure any of these so-called "wastes" can be, and are, turned into ball and cylindrical forms, which, when put on the fire, readily admit of prompt and effective ignition and a lasting and effective fire. Tests made in heating stoves, grates, house furnaces and under steam boilers have shown good results. A test of this new fuel in a blacksmith forge showed superior results.

Many fortunes have been expended by the anthracite people in years gone by in the endeavor to use up the culm piles by molding their contents into briquettes of various shapes and weights, but none of these experiments were commercially a success; hence resort was had to the washing and screening of the culm piles, the product being material down to the size called bird's-eye. The actual dust resulting from all this sifting and separating, however, is permitted to drift off into the streams to the detriment of the property of the farming population. The Schuylkill River is polluted with this dust as far down as Philadelphia. To put this dust to use and service the briquette offers the only practical solution. This would mean a profit to the companies directly, for all coal is salable now and will be for the future. It also means the saving of thousands of dollars to the companies by being relieved from damage claims that yearly occur.

The chief advantages of briquettes are that they ignite quickly; they burn freely, gradually and evenly; they are practically smokeless and burn longer than any other coal; they have no obnoxious gases and will not disintegrate, and they burn from the outside to the center, becoming more compact as they burn.

The bituminous slack could be utilized to the best

advantage in this form and give a better fuel for many millions of people who now use soft coal for domestic and other purposes in many States of the Union. In the Northwest, where the lignite abounds and is now seldom used because of the moisture it contains and of its low fixed carbon, the making into briquettes would revolutionize the fuel supply of a large area of our country. Texas also contains a lignite which could be most admirably turned to advantage if briquetted. The handiness of this form of fuel commends itself to the householder in Paris and other Continental cities and would be welcomed in many cities in the United States.

A test made under a boiler, conducted by E. F. Eldridge, showed the following results:

Detail.	Anthracite.	Briquette.
Duration of test (9 a. m. to 5 p. m.), hours..	8	8
Weather conditions.....	Clear	Clear
Steam pressure by gauge, pounds.....	36	37
Flue gases, F.....	571	558
Feed water, F.....	85	77
Coal fed to boiler, pounds.....	93½	86 9-16
Wood fed to boiler (1 pound wood = 4-10 pound coal).....	4½	2¾
Total fuel fed to boiler, pounds.....	97½	89 5-16
Total ash, pounds.....	12¾	27½
Total combustible of coal fed to boiler, pounds.....	85¾	61 7-16
Coal burned per hour, pounds.....	12¼	11¼
Coal burned per hour, grate surface, pounds..	8½	7½
Total water injected into boiler.....	398	491
Equivalent weight of water, feet, at 212.....	459.7	571
Factor of evaporation.....	1.155	1.163
Equivalent water evaporated per pound of coal fed to boiler, pounds.....	4.71	6.39
Equivalent water evaporated per pound of combustible fed to boiler, pounds.....	5.37	9.23
Builders' rating (at 10 square feet per horsepower) .....	2	2
Horse-power developed (A. S. M. E.), standard	12.3	2

NOTE.—The large amount of ash was due to the fact that an excessive quantity of the binder and other matter was used. In future one-third will be the practice, with less ash as a result.

## PERSONAL.

At Pittsburgh, Henry W. Oliver of that city has recently acquired the Smith Block at a reported price of \$1,000,000. Next to Henry C. Frick, Mr. Oliver is now the largest realty holder in Pittsburgh.

The banquet of the Iron and Steel Institute, which will be held on May 8 in London, under the presidency of Andrew Carnegie, will be attended by a large number of distinguished men. Among those who have accepted are the Duke of Argyll, the Earl of Elgin, Lord Alverstone, Lord Balfour of Burleigh, Lord Brassey, Leonard H. Courtney, John Morley, Sir Thomas Barlow and Archdeacon Sinclair.

John W. Lees, superintendent of the Newburg mills of the American Steel & Wire Company, Cleveland, Ohio, has resigned to accept a position with the Inland Steel Company.

Robert Garland, secretary and general sales agent of the Standard Chain Company, at Pittsburgh, has tendered his resignation as an official of the company in order to devote his entire time and attention to other manufacturing enterprises in the Pittsburgh district, in which he is heavily interested. His successor will be elected at the next annual meeting of the company, which will be held on February 17, at Jersey City, N. J. Mr. Garland is still a member of the Board of Directors, as well as one of the Executive Committee.

Charles M. Schwab, president of the United States Steel Corporation, who has been in Europe for some months, will sail for this country on March 11. His health is said to be greatly improved.

E. W. Murge of the Pope Tin Plate Company, Pittsburgh, has returned from the West Indies greatly improved in health.

V. A. Moore has severed his connection as secretary and treasurer with the Alabama Tube & Iron Company, Birmingham, Ala.



# HARDWARE.

AT the root of the success of every business concern lie the fundamental facts of discipline and organization, whether is be the pervading influence of a dominant personality or the complete system of a trained executive. Order is quite as much the first law of a business organization as it is of nature. Without it any business is too mob-like in its character to achieve more than a temporary success. The question, therefore, of organization is not only the primal one, but it has added significance in these days of great consolidations. It will always be true that there will never be anything to supplant the one-man power when properly directed, but it is equally true that proper organization must go along with this dominant personality, and that provision must be made for a successful conduct of the business when the one man in power relinquishes his post. Then, again, such leaders are rare and most concerns have to be content to get along without them.

It might seem a simple proposition as a solution of the difficulty to follow the plan of governments, and to run a business on an elaborate system of rules, competitive examinations, supervision, rewards and punishments. The first serious objection to this is the fact that as a business proposition, looking to profits, governmental methods are the most expensive, inefficient and the slowest ways of accomplishing things known to our daily experience. In order to obtain an accuracy, which does not pay for its cost, there has been instituted an elaborate system of red tape, which usually prohibits all speed and directness. The time and expense used to complete Government public works, as compared with similar private enterprises, illustrates the point better than any argument.

The second serious objection is that we are dealing with men, not machines, and that human nature is, and always will be, governed largely by sentiment. Even in the army the *esprit du corps* of a regiment depends not so much on its drill and discipline as upon the inheritance of its past deeds and the spirit which rules and animates it. The result is that those who govern an organization upon system, distributing rewards and penalties strictly where they are due, are seriously disappointed to find that their method creates cold blooded calculation often more than loyalty, and that human nature rebels at being governed by regulations, however just and well meant. It may be well urged that it is impossible to make encouragement, sympathy and enthusiasm constant factors in governing large numbers of employees, save in the case of born leaders of men; yet the fact remains that it is impossible to find anything in their place which will produce the same results. Enlightened self interest is a most powerful motive when fairly applied, and the failures in its application, notably in cases of profit sharing, have usually been those where the efficient were comprehended with the unworthy alike in its benefits. To find some method by which the best energies of employees may be called out and rewarded deserves careful thought and will justify prudent and courageous experimentation.

The problem we have set forth is neither new nor yet has it been satisfactorily solved, but it is significant that the attention of the leading merchants and manufacturers, and especially of the great corporations, is being devoted to its answer, and so far those who have

made most progress have mingled the personalities of a few leaders and many able lieutenants with a strict, yet elastic, system of discipline.

## Condition of Trade.

The condition of things continues eminently satisfactory. The activity which prevails in commercial circles generally is an indication of the existing prosperity of the people at large. In this activity and welfare the Hardware trade has certainly its share. With few exceptions, owing to local conditions, reports from merchants in all parts of the country are very satisfactory and characterized by a decidedly hopeful tenor. The indications point with remarkable uniformity to a large volume of business during the first half of the year, with little in sight to cause apprehension that the last half will see a material change in conditions. Manufacturers and merchants, wholesale and retail, are accordingly carrying on their business with courage and enterprise, taking a cheerful view of the situation and arranging to reap what advantage they can from the opportunities presented by the present existing favorable conditions. Much will, of course, depend on the crops, which if good will do much to avert the reaction from the present high pressure. It is recognized, too, that other influences may unexpectedly and even suddenly disturb the commercial or financial world, as there is a feeling that the present state of things cannot last indefinitely. There is thus with the enterprise, which is justified by the prevailing conditions, an undertone of conservatism, if not of caution, so as to have business in such shape that a weakening in prices or a material letting up in the demand would not be disastrous. In the Hardware market there is a good deal of business doing and sales are easily effected. Prices as a rule are decidedly firm, with comparatively few changes. The lines which have been irregular are generally held more evenly. Some lines are more or less demoralized, but these are comparatively few and do not represent the market as a whole.

### Chicago.

(By Telegraph.)

Manufacturers of Hardware, both of standard and special lines, are reported extremely busy. Contracts taken in December and January were unusually heavy and specifications upon these contracts are being constantly received to a very liberal extent. It is significant that jobbers are requesting anticipation of contracts in many instances and the factories are handicapped by the difficulty in obtaining raw material promptly. At the same time quite a number of manufacturers have increased capacity during the past year, and through this means are able to make prompter shipments than was the case during the rush period of last year. These remarks apply generally, but are especially pertinent as regards Builders' Hardware, including Butts, Strap and T Hinges, Registers and other specialties used in building construction. The keen competition which has resulted in low prices for Butts and Strap and T Hinges has brought an unusually heavy tonnage to manufacturers, and it is now reported that another effort is to be made to adjust differences and bring about constructive rather than destructive competition. It is recognized by most of the belligerents that if the low prices for the finished material continue in the face of the constantly increasing cost some heavy losses will be sustained which may bring about embarrassment in the near future. The outlook is now regarded favorable to a settlement. Stove manufacturers, Wagon and Carriage makers and producers of Washing Machines, Refrigerators and other Specialties who place contracts for Rivets, Screws, Bolts, &c., in January and December are now specifying liberally, and although the busiest season for such is over,

there is considerable new business coming from manufacturers of furniture, and all request early deliveries. Jobbers and other merchants are the principal buyers at the present time, reflecting the brisk movement, which has been accelerated in jobbing lines during the last week. Very liberal shipments are being made of standard goods, especially Galvanized and Tin Plate, Hoes, Forks, Rakes, Spades, Shovels, Axes, Wire, Nails, &c., but the active movement of Specialties is also a conspicuous feature. The demand for Bicycles, Sewing Machines, Lamps, Rope, Wooden Ware, Paints, Brushes and kindred goods is unusually liberal, notwithstanding the transportation difficulties.

#### St. Louis.

(By Telegraph.)

The heavy demand on Hardware jobbers continues, and it is remarked that one of the features is the large volume of late buying in Axes, Cross Cut Saws, Skates, &c., which is due to the conservatism in placing orders last fall and early in the winter in these lines. But dealers are now buying carefully, apparently avoiding any possibility of overstocking. Bicycles and Bicycle Sundries, as well as other lines of Sporting Goods, are showing increasing activity. Screens, Screen Doors and Wire Cloth are now in popular demand. Much difficulty is still being experienced in getting the full quota of goods from manufacturers, due largely to the transportation problem. Carriage Bolts are referred to as a particular item difficult to get full specifications of, and Saws, Planes and other Carpenters' Tools are also hard to secure for prompt shipment. It is said that jobbers are making a heavier call than usual for Wire products, including Nails, Barb Wire, &c., and with the enormous demand reported from other centers the manufacturers are hard pushed to satisfy the requirements of this market. Spring trade conditions are referred to as never having looked brighter, and with unforeseen events coming up the jobbing trade expect to have their hands full for some months to come.

#### San Francisco.

The weather, the crops and the retailers' convention have formed the leading topics of interest in Hardware circles during the past fortnight. Until the recent rains there were many apprehensions that the crops over the Northern and Central portions of California would be very light, but we have had all the rain we want for the past fortnight—in some places too much, as in Humboldt and Mendocino counties, the former particularly. Here roads and bridges have been swept away. Of course, business which in this county for the past year has probably been better than anywhere else in the State, has been interfered with considerably, but the repairs that have to be done will in this line of business go far to make up for the temporary interruption. Meanwhile Clearing House exchanges in San Francisco continue to show a big increase over last year—for January more than 20 per cent. The Hardware and Metal retailers have shared in the general prosperity, and the annual convention has been held in this city. The association has done much to improve trade relations and to increase the prosperity of the trade and a good understanding between its various branches. The men in the various branches of the trade have come to realize that they have one common interest, and that if one suffers all suffer. Among the leaders of the retail trade are some especially able business men. The import trade in Pig Iron, Steel Beams, &c., continues to be large, and Tin Plate from England has again begun to put in an appearance among the list of imports. It had been practically absent from it for a long time past. There have been large exports of Machinery, Hardware, Sewing Machines, Pipe, &c.

### NOTES ON PRICES.

**Wire Nails.**—Demand continues steady and a large amount of business has been booked for future shipment. This is so great that fears are entertained in some quarters that difficulty will be experienced in obtaining delivery on orders placed after March 1. The mills went into the new year with practically no stocks on hand, and since that time have been unable to accu-

mulate stocks to any extent. The tone of the market is decidedly firm and there are some anticipations of a slight advance. Quotations are as follows:

Jobbers, carload lots.....	\$1.90
Retailers, carload lots.....	1.95
Retailers, less than carload lots.....	2.05

**New York.**—In the local market demand continues steady and in fair volume. The market is firm at the following quotations: Single carloads, \$2.10; small lots from store, \$2.15.

**Chicago, by Telegraph.**—Sales during the past few days have been especially heavy and specifications have also been received to a liberal amount. Notwithstanding the heavy tonnage already placed it is predicted that there will be a shortage of Nails before the season is over. Both independent and combination mills are largely oversold and lack of fuel and freight blockades have interfered with the continuous running of the mills. Official quotations remain firm at \$2.10 in carload lots, mill shipment, and \$2.20 in less than carload lots, f.o.b. Chicago.

**St. Louis, by Telegraph.**—The demand coming to the jobbing trade at this time is of very fair volume. Small lots from store are quoted at \$2.20.

**Pittsburgh.**—There is a steady demand for Wire Nails and the mills are still having difficulty in making shipments owing to congested condition of the railroads. However, it is thought the freight situation will soon improve, as two leading roads have lifted embargoes of freight placed some time since. Shipments from the mills are mostly on contracts placed before the recent advance in prices. We quote \$1.90 in carloads to jobbers, \$1.95 in carloads to retailers and \$2.05 in small lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days. For galvanizing Nails 75 cents per keg is charged and for tinning Nails \$1.50 per keg extra.

**Cut Nails.**—Conditions remain unchanged regarding delay in making shipments on account of the congested condition of the railroads and scarcity of fuel for the operation of mills. The volume of business is fair and the tone of the market is firm. Quotations are as follows: \$2.10, base, in carloads, and \$2.15 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination; terms 60 days, less 2 per cent. off in 10 days.

**New York.**—An improvement in the demand for Cut Nails has been a feature in the local market. Quotations for carloads and less than carloads at the advance are as follows:

Carloads on dock.....	\$2.24
Less than carloads on dock.....	2.28
Small lots from store.....	2.35

**Chicago, by Telegraph.**—The freight blockade, scarcity of fuel and difficulty of obtaining raw material have interfered with operations at the mills and have been felt in the distribution of the finished product. The demand continues fair and the market has remained firm. As a rule sales being made on the basis of \$2.26½ in carload lots, and \$2.36½ in less than carload lots, for Steel, Chicago. Iron Nails are selling in a small way as high as \$2.50 per keg from store, Chicago.

**St. Louis, by Telegraph.**—Cut Nails are in moderate demand and prices are well maintained. Quotations in small lots are as follows: Steel, \$2.42; Iron, \$2.50.

**Pittsburgh.**—Demand for Cut Nails is somewhat quiet, but the mills rather welcome this, as it will give them a chance to catch up on belated shipments caused by congested condition of the railroads. The Coal supply is better, and the freight situation is showing some improvement. We quote: Steel Cut Nails, \$2.10, base, in carloads and \$2.15 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination, 60 days, less 2 per cent. off in 10 days. Iron Cut Nails take 10 cents advance over Steel.

**Barb Wire.**—The amount of new orders being placed is moderate, owing to the large amount of business which was placed before the recent advance in prices took place. Mills are making shipments on these contracts. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:



	Painted.	Galv.
Jobbers, carload lots.....	\$2.20	\$2.50
Retailers, carload lots.....	2.25	2.55
Retailers, less than carload lots.....	2.35	2.65

*Chicago, by Telegraph.*—Further heavy contracts have been made during the week, but especially during the past few days, and specifications on old contracts have been liberal. The freight congestion preventing the prompt receipt of ample amounts of fuel and Steel has hampered work at the mills and made aggravating delays in shipments, which, it is claimed, will result in a scarcity of some material before the season is over. But there are already signs of improvement. The jobbing trade has developed more actively during the past few days, and the market has ruled strong. Galvanized is selling at \$2.70 in carload lots and \$2.80 in less than carloads, Chicago. Staples have been in better demand and firm on the basis of \$2.25 in carload lots, and \$2.35 in less than carload lots.

*St. Louis, by Telegraph.*—Jobbers report the condition of trade for Barb Wire as being well maintained, both as to volume and prices. In small lots from store, Painted is quoted at \$2.55 and Galvanized at \$2.85.

*Pittsburgh.*—A fair amount of new business is being placed, but the mills are running mostly on contracts. Shipments are still seriously interfered with by a congested condition of the railroads. Prices are firm, and we quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days: Painted, \$2.20; Galvanized, \$2.50, in carload lots to jobbers; Painted, \$2.25; Galvanized, \$2.55, in carloads to retailers; Painted, \$2.35; Galvanized, \$2.65, in small lots to retailers.

**Plain Wire.**—There is a satisfactory volume of business, made up for the most part of small lots. Mills are experiencing difficulty in getting fuel, and shipments are unsatisfactory. Quotations are as follows, f.o.b. Pittsburgh, terms, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.80
Retailers, carloads.....	1.85
Less than carloads.....	1.95

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

6 to 9	10	11	12	12½	13	14	15	16	17	18
Base	\$0.05	.10	.15	.25	.35	.45	.55	.70	.85	Plain.
	\$0.30	.35	.40	.45	.55	.65	1.05	1.15	1.70	1.85 Galv.

*Chicago, by Telegraph.*—While there is relatively less Plain Wire selling at the moment, business is very satisfactory, and specifications are being received on old contracts quite liberally, with a more urgent demand for goods previously ordered. There has been a good merchant trade, and the market has remained firm. Nos. 6 to 9 in carload lots are held at \$2 on track and \$2.10 from store. Galvanized brings 30 cents extra for Nos. 4 to 14.

*St. Louis, by Telegraph.*—A fair call is being experienced by the jobbing trade for Plain Wire. No. 9 at \$2.15 and Galvanized at \$2.45 are quotations from store in small lots.

*Pittsburgh.*—A moderate amount of new tonnage is being placed, but the mills are shipping mostly on old contracts. There is still difficulty in making prompt shipments on account of the scarcity of cars and motive power. Prices are firm and we quote: Plain Wire, \$1.80, base, for Nos. 6 to 9, in carloads to jobbers, \$1.85 in carloads to retailers and \$1.95 in small lots to retailers; Galvanized, 30 cents extra for Nos. 6 to 14 and 60 cents extra for Nos. 15 and 16.

**Axes.**—The increasing probability that the consolidation of Axe and Edge Tool interests will not be carried into effect invests the Axe market with a good deal of interest. If the pool which is talked about is formed and should include practically all the makers, it would, of course, tend to strengthen the market for a time. If, however, the market becomes an open one it is regarded as likely that prices will be somewhat lower, unless, indeed, there should be some kind of agreement among

the manufacturers to maintain prices at a reasonable figure. In view of the uncertainty of the present situation jobbers who have stocks on hand are showing a disposition to get rid of them, and orders which are being taken by the manufacturers are for the most part with an understanding that the purchasers shall be given the benefit of any decline which may take place in the Axe market.

**Shovels and Spades.**—The low prices established some time ago by the association have given the outside manufacturers a good deal of trouble, as those who are not favorably situated are unable to compete and make anything like a living profit. As a result some of them have discontinued for a time, at least, the manufacture of Shovels and are awaiting more favorable marketing conditions. A meeting is being held this week in Pittsburgh, at which a good many of the independent manufacturers are represented. The object of the meeting is to confer in regard to the present condition of things and the course to be pursued. It remains to be seen whether or not it will be found feasible to take any concerted action for the betterment of the situation.

**Tacks.**—The Tack market is in a very unsatisfactory condition, with a good deal of irregularity in prices. Competition between the manufacturers is active and there is a good deal of strife for orders.

**Paris Green.**—Some manufacturers report a good demand for Paris Green, while others find that requirements are light. Owing to a further increase in the cost of Vitriol prices have again been advanced, as follows:

#### Paris Green.

Less than 1 ton.	Per lb.
Arsenic kegs or casks.....	13½c.
Kegs, 100 to 175 pounds.....	14c.
Kits, 14, 28, 56 pounds.....	15c.
Paper boxes, 2 to 5 pounds.....	15c.
Paper boxes, 1 pound.....	15½c.
Paper boxes, ½ pound.....	16c.
Paper boxes, ¼ pound.....	17c.
One to 5 tons, 1 cent per pound less; 5 tons and over, 1½ cents per pound less.	

These prices are referred to as being generally well-maintained.

**Cordage.**—Demand for Rope is fairly good for the season, though orders are restricted to immediate requirements in most cases. Weakness in the raw material market is having some effect in keeping down the volume of business in Rope. Quotations are as follows: Manila, on the basis of 7-16 inch and larger, 11 cents per pound; Sisal, on the same basis, 9 cents per pound. A rebate of ¼ cent per pound is allowed in large quantities.

**Glass.**—Local conditions in the Window Glass market are unsatisfactory as far as demand is concerned. Reports from other sections of the country are to the effect that there is a large demand for single strength Glass in the first three brackets. The price situation is referred to as being more satisfactory than for some time, quotations being well adhered to. Quotations of the jobbers' association, for either single or double strength, are as follows:

	Discount.
From store .....	90 and 10 %
F.o.b. factory, carload lots.....	90 and 20 and 2½ %
F.o.b. factory, 2000-box lots.....	90 and 25 %

## EDGE TOOL CONSOLIDATION.

THE parties who are interested in effecting the Edge Tool consolidation have not yet abandoned the effort and the more sanguine of them express confidence that, notwithstanding repeated delays, it may be carried to a successful conclusion. The more general opinion, however, is that the chances are against its success, and in this opinion at least some of the manufacturers unite. The matter of securing the renewal of the options which have expired continues to receive attention, but some of the manufacturers are apparently holding back. There have been some conferences among the Axe manufacturers to determine the feasibility of forming a pool to go

into effect in case the consolidation is not effected. Some of the manufacturers are, however, averse to taking this action and it remains uncertain what the outcome will be.

## A PLEA FOR THE SYNDICATE BUYER.

BY A WESTERN MERCHANT.

I HAVE been much interested in the articles and letters that have appeared in *The Iron Age* upon syndicate buyers. For many weeks I was led to believe they were the embodiment of all that was wrong, and jobbers and manufacturers were crying aloud for some one to deliver them from these octopuses. I was not surprised that the trade did not rush to the defense of the syndicate buyer, for there is a pretty strongly grounded opinion abroad that he is abundantly able to take care of himself.

### The Genesis of Syndicates, Trusts and Mergers.

The word "syndicate" came into prominence 20 years or so ago, and for a while was very popular. If three men contributed \$5 each to buy a silk umbrella, they "formed a syndicate," and the papers made due note of that fact. After syndicates came "trusts," and trusts seem to be growing into "mergers," and what will follow these I do not know, unless it be the sheriff.

### The Syndicate Explained and Justified.

Western houses have had buyers in New York from a long way back, and it was natural that two houses, in no way competing in the same territory, should unite upon one man to work for them both. And it was just as natural that they should permit him to buy for a third concern, in another non-competing section, if by so doing they cut down expense to their own house. Thus was a "syndicate" formed, and the syndicate buyer became a factor in the business world.

Is it necessary to say that his position in business was just as honest, as necessary and as businesslike as that of any jobber or manufacturer? If the houses that he represented were able through him to get some special prices, this was what he was paid for. He could say to the manufacturer that he represented several jobbing houses; that his purchases would amount to a goodly sum; that where one of these houses bought they all bought, and if there were any special prices going it was for that manufacturer to decide whether this was the place to quote them or not.

### A Conundrum.

Where did the syndicate buyer differ in such argument from any other buyer? Where is the jobber who has ever been happy if, like my old friend Pappenheimer of Cincinnati, he did not have "a leetle advantage?" He does not exist.

### Specials Becoming Generalized.

But a peculiar element came into business. Smith, for good reasons of his own, might be willing to sell Jones of Oshkosh his Axes at an inside price, because he wanted Jones to drop another brand of Axes and take up Smith's; but he did not want to give this special price to Robinson of Little Rock, because Robinson was already handling the Smith Axe and was satisfied. Here came in the mischief of the syndicate buyer, from the manufacturer's point of view; he gave all his houses the benefit of his skill and knowledge and pertinacity, as a decent regard for what is right would suggest that he should do, but he was interfering with the proper distribution of the manufacturer's "specials," and making them general.

### A Boomerang.

Manufacturers have told me, as if it should impress me favorably toward their goods, "We never quote prices to a syndicate buyer." To my mind it at once suggested that they had more than one price, and I began to wonder if I was on the ground floor or the sub-cellar. I have heard them say, too, of some certain firm, "We never go near them; they give out no orders,

but send the prices they receive to post up the buyer in New York."

### Syndicate Buyers with Lives of a Cat.

Under these circumstances one would suppose the syndicate buyer would cease to be able to hold his own and would gracefully bow himself out, but he seems to have flourished and to have obtained all the goods his houses needed, and evidently they are suited with the service he renders. Perhaps the manufacturers who decline to do business with him, and who voice their dislike of him in conventions and through *The Iron Age*, are those who find the need of having a special price, to be used where it will do the most good, and they alone are to decide where that place is.

### A Natural Sequence of Evolution.

Surely it was inevitable that with the advent of buyers for jobbers there would also be buyers for the large and progressive retailers. That man is a back number who imagines that the brains of the Hardware trade are hid under jobbers' hats.

### The Retailers' Ambition.

It is a mistake, too, to suppose that all retailers feel that they are under obligations to buy of a jobber. The ambition, and it is a proper one, of every wide awake retailer is to get in touch with the manufacturer, and he has been getting nearer and nearer that end in the past ten years. Jobbers may assign exclusive territory, and all that do business therein, to each other, but there are hundreds of retailers who refuse to be assigned, or to be considered the property or prey of some jobber.

### Where the Shoe Pinches.

Retailers who could handle original packages of goods began to utilize the New York buyer, and the claim that such men secured jobbers' prices is probably true, and what is more, it ought to be true. That it cut down the jobbers' profits or sales is not so sure. Such retailers are not the jobbers' customers, except in a very small way, and in an emergency.

### Some of the Buyer's Power.

The buyer with 10 or 20 such retailers behind him could go to almost any factory in the United States and make a showing for himself that would entitle him to as good prices as jobbers received. Such retailers do not harm the jobber, for they are not trying to wholesale, or to cut into the jobbers' trade with others, but every jobber would dearly like to cut them off from securing a dollar's worth of goods except through the jobbing trade. That is natural and to be expected.

### A Hint for Retail Associations.

It has been a surprise to me that the question of syndicate buying has not assumed greater proportions in the conventions held by retail Hardwaremen. One would think the first effort among them toward co-operation would be made at the fountain head—the buying. Here is a meeting reported this week of a State association having 300 retail Hardware dealers in its membership. They have not yet realized their strength or opportunity. The day will come when they will, and the first step in their progress will be to establish a syndicate buyer, the "syndicate" being the State association.

### Kicking Against the Pricks.

It is by no means improbable that the long headed jobbers have seen this ahead of them, hence their war against syndicate buyers. But they are fighting against Fate. The syndicate buyer will exist as long as he is of benefit to those he represents.

HANOVER WIRE CLOTH COMPANY, Hanover, Pa., were chartered on the 9th ult. and expect to be ready to start 100 looms by July 1. W. F. Kintzing, who has disposed of his interest in the New Freedom Wire Cloth Company, will be superintendent of the plant. The following are the officers of the new company; W. L. Glatfelter, president; C. E. Moul, secretary and treasurer; P. H. Glatfelter, W. L. Glatfelter, W. F. Kintzing, Martin Moul and C. E. Moul, directors.



## Correspondence.

### From Simmons Hardware Company.

ST. LOUIS, February 7, 1903.

To the Editor:

*The phrase "The recollection of quality remains long after the price is forgotten."*

This phrase was originated by E. C. Simmons a long time ago and was registered by us as a trade-mark, indicative of our belief that the foundation stone of success in business is the quality of goods. As a result of using this motto in an article which I wrote for *The Iron Age* on the subject of special brands, it has been copied extensively by a great many people, some of them using it as though it was their own motto, others putting the phrase in quotation marks. This has necessitated our writing a great many letters calling the attention of the parties using it to the fact that we regard it as our own exclusive property.

Of course, while imitation is the sincerest flattery, and we are complimented by their desire to use this phrase, yet we naturally wish to confine the use of it to ourselves.

We may add that we feel quite sure that none of the parties using this phrase had the slightest intention of infringing upon our rights. A. W. DOUGLAS, Secretary.

### Penalty for Non-Delivery of Goods.

In reply to an inquiry which appeared in one of our recent issues we have the following interesting letter from a prominent Western manufacturer. It takes up, it will be seen, the question as to the penalty to which the manufacturer is liable for failing to execute a contract for the delivery of goods:

To the Editor:

Your correspondent in your issue of January 22 asks if he is justified in deducting 50 cents penalty for non-delivery of goods billed. This opens the question of inferential damages.

The writer, having just been called 300 miles to testify as an expert in a case where a concern refused to pay a bill because of slow delivery of goods, feels posted in the matter, as the judge laid down the rule as follows:

If the goods are not delivered within a reasonable time, the purchaser should go in the market and buy them and charge the difference to the seller. This would be direct damages. What "a reasonable time" might be would be a question for the jury.

The purchaser, if he did not do this, could get no inferential damages unless at the time of the purchase he told the seller just what orders he had in hand, to fill which he purchased the goods, and could prove that he lost those orders by reason of non-delivery of those particular goods.

As your correspondent did not apparently tell the seller that the caps had been sold and does not show that he lost that sale by the non-arrival of the caps, he would not be authorized to deduct any penalty.

### AMONG THE HARDWARE TRADE.

Rudolph, West & Co., dealers in Hardware, House Furnishing Goods, &c., Washington, D. C., are about to remove their business to a new establishment. They have secured a lot, approximately 30 x 135 feet, on the south side of New York avenue, near Fourteenth street, upon which they are erecting a building, four stories and basement, partly fire proof, and covering the entire site. The new building will give the firm about 20,000 square feet of floor space, being nearly double their present area. The front is of white brick and stone. The first floor will be fitted up as a modern Hardware store, having counters, shelving, cases, &c., all especially designed in the best quality of quartered oak. They intend to equip the building with electric elevators and lifts, together with dumb waiters and an internal system of telephones. New York avenue is one of the widest streets in Washington, thereby affording ample facilities

for receiving and shipping goods, and in addition to this there is a very wide alley in the rear opening directly on G street. There is also a small alley opening into Fourteenth street. This business was established by J. H. Chesley & Co. in 1885.

C. W. Hawley, Bridgeport, Conn., has bought out the Plumb Hardware Company of that city, and will continue the business of the two houses under his name in the old store of the Plumb Hardware Company, into which he has moved his stock. A number of years ago Mr. Hawley was associated in business with Mr. Plumb under the firm name of Plumb & Hawley.

O. Gossard has bought the Romaine Hardware, Stove and Farm Implement stock in Bartlett, Kan.

J. H. McCabe has sold his interest in the McCabe-Johnson Company, wholesale and retail Hardware and House Furnishings, Spokane, Wash., after a period of 13 years' service, and is succeeded by Millard Johnson as president, W. R. Cooley assuming the office of secretary-treasurer.

The copartnership heretofore existing under the firm name of Schemmel & Johnson, Escanaba, Mich., has been dissolved by mutual consent, Mr. Johnson retiring, but continuing in the plumbing business. The Hardware, Roofing, Tinning and Furnace business will be continued by Mr. Schemmel under the style of the Schemmel Hardware Company.

Kull & Bantly, Hardware, Stoves, Plumbing, &c., Conemaugh, Pa., have dissolved, Mr. Kull retiring. Edgar Bantly will continue the business in a new building just completed, two doors from the old stand.

Felix Clearman has disposed of his Hardware and Furniture business in Prairie Hill, Mo., to W. G. Wright.

U. G. Kramer and H. D. Bachtell have purchased the stock of J. M. Boehmler & Co. in Waterloo, Iowa, and will continue at the old stand. The new proprietors, however, will discontinue the plumbing and hot water heating department. This sale was made because the Messrs. Boehmler desired to give their entire attention to the conduct of their two other stores, one at Cedar Falls, under the firm style of Boehmler Bros., and one at Tama, under the name of U. S. Johnson & Co.

On the 24th ult. the Kilbourne-Jones Company and the Hall-Collins Hardware Company, both of Columbus, Ohio, were incorporated as the Columbus Hardware Company. The new concern will do a general jobbing Hardware business at the same location occupied by the Kilbourne-Jones Company. C. F. Luthy, formerly president of the Stuber, Luthy & Gregg Company, a wholesale notion concern of Columbus, becomes president and treasurer of the new company. Mr. Luthy is an experienced Hardwareman, having, prior to his residence at Columbus, conducted a large retail business at Millersburg, Ohio, for more than 30 years. Frank P. Hall, the vice-president and general manager, was formerly president of the Hall-Collins Hardware Company, and has been prominently identified with the Hardware interests of Columbus for several years. Proctor E. Seas, the purchasing agent, is also a Hardwareman of experience in both the wholesale and retail trade. The other members of the new company are Chas. M. Luthy, H. H. Hall, J. A. Dury and W. C. Kennedy.

John Hanson and Mr. Toeves have purchased the Hardware store of Perner & Harms at Inman, Kan.

J. S. Marshall has purchased the Low Hardware stock at Pulaski, Iowa.

The Hardware firm of Hemmick & Jones, Columbia City, Ind., have dissolved, the senior member retiring. Mr. Hemmick disposed of his interest to Jacob Jontz and the firm style has been changed to the Jones & Jontz Hardware Company.

# Illinois Retail Hardware Dealers' Association.

(Advices by Telegraph.)

**W**E are in receipt of the following telegraphic advices in regard to the proceedings from our special representative at the meeting:

The fifth annual convention of the Illinois Retail Hardware Dealers' Association was called to order in the Assembly Hall of the new Illinois Hotel, Bloomington, at 10.30 Tuesday morning, with President H. G. Cormick of Centralia in the chair. The president read the programme which had been prepared for the several sessions of the convention.

## Roll Call

showed the following members present:

Robert G. Scheurer, Vandalla.	Geier & Pephler, Chicago.
Kuhner & Segrist Hdw. Co., Highland.	H. S. McCurdy, Bloomington.
G. E. Gundling, Chicago.	Pekin Hardware Co., Pekin.
H. O. McClure & Co., Chicago.	Freeport Hardware Co., Freeport.
Barbour Hardware Co., East St. Louis.	L. D. Schrader, Barrington.
F. B. Jordan, East St. Louis.	H. G. Cormick, Centralia.
J. H. Vawter, Salem.	Wm. Bittel, Peoria.
J. & M. Butweiss, Chicago.	Balseer & Reeves, Peoria.
S. S. Woodward Hardware Co., Carlinville.	Fiedler Bros., Thomasboro.
Powers Bros., Chicago.	J. S. Bellamy, Sandoval.
W. L. Ferguson, Decatur.	Powers & Williams, Streator.
W. F. Ferguson, Decatur.	Geo. B. Swar, Mattoon.
J. C. Schuberth, Chicago.	Fay Bros., Polo.
G. A. Neeb, Chicago.	Murphy Bros. & Anderson, Galesburg.
G. W. Kreider, Tonica.	Chas. Mauer, East St. Louis.
Seigler Bros., Elgin.	Nish Bros. & Co., Elgin.
Robert W. Brown, Iroquois.	Schaub Hardware & Iron Co., East St. Louis.
E. N. Howell Hardware Co., Dixon.	Frank F. Porter, Chicago.
H. A. Uehren, Aurora.	Martin Englehardt, Chicago.
Geo. E. Roesch, Aurora.	Chas. Dahlstrom, Chicago.
Leonhard & Brefeld, Ironton.	John Ruedel, Chicago.
J. L. Smith, Chicago.	Paul & Krough, Chicago.
W. J. Krueger, Chicago.	J. W. Howard, Smithfield.
D. McLaughlin, Chicago.	Fred. Waller, Lyons.
G. R. Lott, Chicago.	O. B. Kurth, Centralia.
Carvenney & Hora, Chicago.	G. H. Read & Bros., Bloomington.
Fred. Kurtz, Chicago.	Bullard & Gormley, Chicago.
J. F. Borchardt, Chicago.	Holder-Athey Hardware Co., East St. Louis.
Geo. Engelhardt, Chicago.	C. Hause Stove & Hardware Co., East St. Louis.
Hans Fehr, Chicago.	P. H. Schuster, Chicago.
Theo. Kreuger, Chicago.	E. L. Sommers, Chicago.
A. Pophal, Chicago.	Campbell Bros., Macomb.
W. H. Decker Co., Chicago.	Whitman & Price, Macomb.
W. B. Costello, Chicago.	J. L. Clark Hardware Co., Rockford.
Aug. Greenheld, Chicago.	
F. E. Schanree, Chicago.	
Edw. B. Eiersdorf, Chicago.	
H. L. Peterson, Chicago.	

## New Members.

C. F. Wolley, Chicago.	Hawthorne Hardware Co., Elgin.
Geo. W. Hiser & Co., Lexington.	Scheurer Bros., Nashville.
Elgin Hardware Co., Elgin.	F. B. Jordan, East St. Louis.
D. F. Barclay, Elgin.	The W. G. Wood Co., Irving Park, Chicago.
W. J. Meehan, Elgin.	L. F. Clifford, Bloomington.
Moore & Hawkins, Elgin.	Grant W. Porter, Chicago.
Kimball & Mitchell, Elgin.	
D. M. Primm, Athens.	

## Committees.

President Cormick appointed the following committees:

**ON LOCATION OF NEXT PLACE OF MEETING:** Geo. Barbour, East St. Louis; Fred. Segrist, Highland; J. L. Smith, Chicago.  
**FINANCIAL AND AUDITING:** Charles Williams, Streator; Leo A. Krueger, Chicago; C. N. Murphy, Galesburg.  
**RESOLUTIONS:** W. B. Costello, Chicago; O. B. Kurth, Centralia; Geo. Swan, Mattoon; E. N. Howell, Dixon; D. Y. McMullen, Freeport; L. M. Reeves, Peoria.  
**BY-LAWS:** Wm. Bittel, Peoria; W. T. Gormley, Chicago; Grant W. Porter, Chicago.  
**NOMINATIONS:** F. F. Porter, Chicago; J. W. Vawter, Salem; B. G. Scheurer, Vandalla; Chas. Mauer, East St. Louis.  
**PRESS:** G. R. Lott, Chicago; H. S. McCurdy, Bloomington.  
**QUESTION BOX:** Geo. Engelhardt, Chicago; Robt. Bellamy, Sandoval; Fred. Geising, East St. Louis.

Immediately following the appointment of the committees the convention adjourned to meet at 2.30 o'clock.

## TUESDAY AFTERNOON.

President Cormick called the convention to order at 2.30 o'clock, and announced a closed session, and that only delegates would be admitted to the convention hall. The president invited M. L. Corey, secretary of the National Retail Hardware Dealers' Association, to a seat on the platform. After being introduced to the association Mr. Corey addressed the convention briefly, and thanked them for the honor conferred upon him. President Cormick stated that the local committee of the city of Bloomington had furnished a Ladies' Reception Committee, and if any of the delegates of the convention had ladies with them those ladies would be entertained by

the committee. The president then called attention to the Question Box, and requested members to deposit any question which they desired taken up for discussion during the convention. The president read his annual address, which was as follows:

## President's Annual Address.

Members of the Illinois Retail Hardware Dealers' Association, assembling for our fifth annual convention, we commemorate another year of our existence, and I congratulate you upon the beneficent results to each of you in a social, moral and financial way. All over the broad expanse of this grand old State of Illinois prosperity has dwelt from the beginning to the close of the year, and each has garnered his portion.

Here we are met for the purpose of an interchange of views as to what is best to be done for our business, and I ask of each of you constant attendance upon the



H. G. CORMICK, President.

sessions of this convention and active participation in its deliberations.

## DURING THE PAST YEAR

many efforts have been made to increase the membership of this association. In accord with your instructions at the last convention your president districted the State, and attempted to put a member in charge of each district. He succeeded in finding those who were willing to take the appointment in part of the districts, but in only one of the eight districts were new members secured.

Secretary Clark has traveled a great deal during the year and has added names to our roll. He is deserving of great credit for the manner in which he has conducted the affairs of his office. I have found him at all times prompt, efficient and conscientious. His report will show you the earnestness with which he has performed his duties.

From the foregoing do not get the impression that I am discouraged. That we have a little more than held our own, under the circumstances, is sufficient to cause me to hope that we are yet destined to have the largest association in the country.

I shall be content, if I can induce each of you to

Look up, not down; look forward, not back;  
Look out, not in; lend a hand.

With the conditions surrounding trade in the past year, it was a hard matter to get the uninitiated to realize the necessity for an association. While there is a great demand for goods, and all classes have the money



to pay for them; while the producing trusts are raising prices and the labor trust is keeping wages in unison with advanced prices, the average dealer is not willing to give any time, thought or money to help association work.

#### THERE IS ANOTHER SIDE

which a few pointers indicate will be brought to our attention soon. With a settling of values, with a slackening of demand the dealer will have time to grumble at the manufacturer or jobber who goes to the consumer to keep up the volume of his business, and look about him for a remedy. He has been in this predicament before, and single handed accomplished nothing; as a natural consequence he will come to our council to lend his moral and financial support in solving the problems that confront us.

#### NATIONAL ASSOCIATION.

During the year the National Association has been actively engaged in building up sentiment in our favor with the manufacturers and jobbers, endeavoring to arouse sentiment in States that are yet unorganized and issuing an official manual that will bear its financial burdens; also in preventing the railroads from acting as agents for the catalogue houses; in every case reported in the latter line they have been successful. The results obtained in these directions are very encouraging and worth more to the trade at large than the expense. Great credit is due the gentlemen associated with me in the executive position of the National Association, as they have all given of their time—except the secretary—without compensation.

Since its organization the *personnel* of the National Association has been of a high order, well worthy of your confidence and support. While you may be of the opinion that they have not done things they should have done, yet you must not lose sight of the fact that the movement is new, and radical steps at the beginning would defeat their purpose.

If the different States will give to the National Association the support of members that they ought to give the movement will be rapid enough to suit any one. Indications of a more strenuous policy are now in sight, and hopes are entertained of beneficent results.

It is to be regretted that there are those connected with this effort in our interest that will not only speak disparagingly of its future, but do not by their acts inspire confidence in ultimate triumph. This class have a disheartening tendency, and yet we have them in everything. However, when the hard places are passed and things are easy they are the acme of loyalty and devotion.

It is better to be a little optimistic and occasionally be disappointed, than to be pessimistic and see no good whatever, until the end attained runs over you and forces an unwilling recognition.

#### ONLY BY YOUR UNCONDITIONAL LOYALTY

and some little self sacrifice can we expect to meet the success that those whom you place in official positions struggle for. If sufficient funds are at hand I suggest that we unite with other retail organizations to procure a better peddlers' license law and mechanics' lien law.

#### CO-OPERATIVE BUYING.

In view of the fact that it is necessary to show the dealer who is not affiliated with us that we can save him money, I would suggest that the subject of co-operative buying be placed in the hands of a special committee for consideration. While I have no desire to offend those jobbers who are friendly to us, yet the catalogue house and department store competition makes it imperative that we buy staple lines cheaper, and they certainly can not censure us for doing for ourselves that which they can not do for us.

I would also suggest a vote of confidence in the National Association and recommend that your delegates to the next meeting be instructed to use their influence to have their meeting before the various State meetings.

It must not be overlooked that there will probably be an effort made before Congress adjourns next summer to pass the Parcels Post bill, the evils of which have been called to your attention before. Your delegates to the National Association should be instructed to see that

interest is awakened in this matter at their next meeting.

Your Executive Committee has had but the one meeting, December 23, in the beautiful city of Bloomington, to perfect arrangements for this convention, but through the year their judgment, counsel and enthusiasm have been of great aid in the work done. Many and pleasant have been the letters and conferences had and held with the various members of the association, and have caused me to realize the truth of the following lines:

Loving words will cost but little,  
Journeying up the hill of life;  
But they make the weak and weary  
Stronger, braver for the strife.  
Do you count them only trifles?  
What on earth are sun and rain?  
Never was a kind word wasted,  
Never one was said in vain.

A pocketful of sunshine  
Is better far than gold;  
It drowns the daily sorrows  
Of the young and of the old;  
It fills the world with pleasure,  
In field, in lane and street,  
And brightens every prospect  
Of the mortals that we meet.

#### 275 Members.

Secretary Clark then read his annual report. The secretary announced the present membership as being about 275 members.

The treasurer's report was read, and showed the association to be in a prosperous condition.

#### The People That Sell to Us.

G. R. Lott then read a paper, entitled "The People That Sell To Us," as follows:

There is perhaps no subject that we might take up that would be more interesting than to consider the present relations between wholesaler and retailer. Many times in the course of the year we feel that we are getting the worst of it; no doubt the other fellows have just such feelings as often as we do. Let us consider our side of this question; perhaps some one of the other side can show us where we are wrong, or concede that we are right, and co-operate with us to put a stop to certain practices.

#### THE FURNACE TRADE.

First, the Furnace trade evil. Our country dealers especially have a kick which seems reasonable. It is this: Where two or three Hardware dealers constitute all the Furnacemen of the town, each one an agent for a good line of Furnaces, it seems reasonable that they ought to be left alone to divide the Furnace business between them; but no, there are so many Furnace manufacturers that will sell direct to a house owner, simply because they have no regular agent in that particular town and feel that they are doing the local Furnaceman a good turn if they give him a show to figure on the labor of setting the job. Such a condition is most deplorable. How can a manufacturer figure out that he is entitled to an agency in every town? How can he figure that simply because he is unfortunate in not having an agency in a certain town he has a license to retail there?

#### THE MACHINISTS' TOOL TRADE

is in bad condition in Chicago. In these days of big things the large factories, which employ perhaps thousands of men, see fit to purchase through their purchasing department the tools that their men may want, the employees getting them at wholesale cost. Now the machinist of to-day is not an object of charity in Chicago. On the other hand, he is one of the most independent of men, receiving high wages. If he is entitled to the wholesale price on his tools, who is not?

#### A LITTLE RUBBER HOSE INCIDENT

which occurred in Chicago since our last annual meeting would not be out of place now. A certain manufacturer sold one of our Chicago Association members a bill of Garden Hose, warranted, of course. Some of it proved to be bum Hose. Our retail dealer shoved it back on the maker, who crawled, said first that it

was not warranted to stand washing porches and many other uses, then said that he might have replaced the bum stuff if he had been approached with kid gloves and with an order for more Hose. Our member lost in the first round. He did not get other Hose; his customer did. I have all the correspondence in my satchel that passed between this manufacturer and our member. I have a section of the Hose in controversy; it has been inspected by experts in that line, who have pronounced it rotten stuff. This manufacturer has been up to see the Chicago Association during the last two months or more with samples and prices and a good guarantee.

A common expression of the president of the Chicago Hardware Association, Mr. McLaughlin, was used when the Hose business was discussed at our meeting. It was this: "If a man sticks me once, that is his fault; if he sticks me a second time, that's my fault." The Hose manufacturer in this incident did not get the business of the members of the Chicago Association for 1903.

#### A CERTAIN SAW MANUFACTURER

is just now sending out a very interesting little booklet on the good qualities of his Saws, on the back page of which he says: "If your Hardware dealer does not handle this Saw write me direct and I will sell you."



G. R. LOTT.

And so we may go through the Hardware business from one thing to another. It is the same old story; get all that you can and more, if possible. If we permit this to go on without a strong protest we will get the worst of it; the man that does things openly and above board is no worse than he that does them underhanded. The time is close at hand when our National Association must get busy with the wholesale houses and come to a thorough understanding with them, find out where we are at, whether they will meet us half way.

#### THIS IS A PERIOD OF GIVE AND TAKE.

The labor unions and the employers are doing these things daily, and it behooves us to do so if we wish to protect ourselves. We cannot do much single handed, but through our central body the whole matter could be adjusted without question.

There are many things which we do that are wrong. For instance, I know where houses are with us, in spirit and in practice, still we do not support them; it is not a question of price; I know of no other reason than sheer thoughtlessness on our part.

Our Hardware trade belongs to our local jobber if he is right and fair. If he wants our business and our customers too, then I say emphatically, quit him; the sooner the better.

President Cormick at the conclusion of Mr. Lott's paper asked the members to give their various experiences along the lines suggested in the paper. He said if the members had any grievances this was the place to talk about them. He said he was surprised that there

was so little disposition shown to discuss the subject. Calls were made on various delegates for expressions of opinion on the subject. Mr. Giesing of East St. Louis related his experiences in connection with competing with the large stores in St. Louis who sold goods at retail at wholesale prices. Mr. Fahey of Decatur gave an account of the difficulties that they had labored under at Decatur in connection with the organization of the local association there. He said they had a great deal of difficulty in maintaining prices and preventing ruinous competition. Mr. Eccles of Decatur also made remarks concerning the local conditions at Decatur. He said that in spite of difficulties they had labored under he was convinced that a successful local association could be formed there. He expressed himself in favor of a co-operative buying plan; that if local associations could not harmonize as to prices at which goods can be sold, that much good could be accomplished by co-operative buying and by social getting together.

D. Y. McMullen of Freeport said:

I was for ten years in the manufacturing business. I sold to the jobbers. My largest customers were some of the principal jobbing houses of Chicago and St. Louis. I am now in the retail Hardware business at Freeport.

Mr. McMullen said that he thought that the matter of co-operative buying was worthy of consideration by the association, and if given due consideration it might be good policy for local associations in some localities to adopt this method of making purchases of some staple articles.

Mr. Strehlow of Peoria gave an account of the satisfactory operation of their local association. He said that they had no trouble at all with the local wholesalers. He said that when difficulties came up there had been no impediment in adjusting them.

Mr. Williams of Streator said:

We all know that competition is intense in all lines. We will know that the fellow in a certain line is looking after it to stay in it for what will give him the best results. Sometimes he will tread on somebody else in his efforts to secure business. I feel that whether the association does me one bit of good or not I will stay in it as long as I am in business, and if something should happen to offend me I will consider the conditions and labor to increase the membership. I never have had, nor do I expect to have, a grievance that I wish to refer to the Grievance Committee of this association, but I feel that if we had a membership of 500, or 600, or 1000, in settling my matters of difference with the jobbers or manufacturers, if I had these members behind my back, it would be the best lever I could use to settle my troubles.

The president stated that the next in order was a paper by L. D. Nish of Elgin. This paper will appear in our next issue. The discussion on the subject was participated in by Mr. Fahey of Decatur, F. F. Porter of Chicago, G. R. Lott of Chicago and other members.

The subject of co-operative buying received considerable attention, but no definite conclusion was reached on the subject.

#### Local Associations.

M. L. Corey spoke on the subject of local association. He said:

I certainly have been very much pleased with the discussion. I believe you are talking about a very important thing when you talk about local associations. I heartily indorse the paper that our brother has read before us. I want to tell you another thing. The officers of the National Association have heard a good deal about local associations during the last two years. From almost every State and from almost every association comes the same report—nothing but good. I have had experience in the matter for the last four or five years in my own town. We have a small town, and I want to say to you that some of the best local associations exist in towns under 2000 inhabitants. We take up the matter of price; of giving credit to certain persons; of regulating this or that. For instance, in regard to



public subscriptions for any object, charitable or otherwise. That matter is placed in the hands of a committee, who pass upon the propriety of making donations for the purpose.

One delegate inquired whether the dealers present had had any experience in getting up local associations to include dealers in several neighboring towns. Several delegates said they had been quite successful in co-operating with dealers in various towns.

A member from Aurora said that their local association had worked very successfully in the matter of determining who should be entitled to credit by the various local Hardware dealers. He said that the local dealers there were very much pleased with the success of the association.

Mr. Sheldon of Chicago gave an account of the very satisfactory experience he had had and benefits derived from belonging to the Chicago local association, especially with reference to their co-operative system of buying many articles of Hardware.

#### Mr. Corey's Address.

President Cormick called on Mr. Corey to address the association on general subjects. Mr Corey said:

I want to congratulate the State of Illinois on its representation here to-day, and especially the large delegation that Chicago always sends to this meeting. You can be proud of it and proud of them. There is no other State in the Union that gets anything like the success and aid that you receive from the city of Chicago. I don't think that we have a town or a city in our State that furnishes us over five members. We have towns where there are more than five members, but in our larger cities we have not succeeded in securing a larger membership.

Mr. Corey then referred to the social evils connected with employees in large department stores in the large cities where the employees are chiefly women and girls. They were paid such small salaries as to make their prospects in life very unpromising. He referred to the fight made against the Parcel Post bill now pending in Congress. He said that the National Association was making good progress in the organization of Hardware associations in States heretofore unorganized. He said that Colorado would probably send a delegation to the meeting of the National Association in Chicago.

The president announced that the Local Committee had arranged a smoker for the evening, to which all the delegates were invited. The convention then adjourned to Wednesday morning at 9 o'clock.

#### Smoker.

Tuesday evening the manufacturers and their representatives, together with the delegates, attended a smoker in Armory Hall. The smoker was tendered by the association to its members and visiting manufacturers, and the latter provided the entertainment, which consisted of music, singing, dancing, recitations, &c. A very enjoyable evening was spent and many comments were heard to the effect that this form of entertainment was much preferable to the customary banquet. The following were the contributors to the entertainment:

Estate of P. D. Beckwith, Dowagiac, Mich.; Reading Hardware Company, Chicago; E. C. Atkins & Co., Indianapolis, Ind.; *The Iron Age*, Chicago; Ranney Refrigerator Company, Chicago; Brand Stove Company, Milwaukee, Wis.; Trout Hardware Company, Chicago; M. & D. Range Company, Chicago; Bloomington Stove Company, Bloomington, Ill.; L. H. Richards Mfg. Company, Aurora, Ill.; Chicago Hardware Mfg. Company, Chicago; Lawson Mfg. Company, Chicago; *American Artisan*, Chicago; A. J. Lindemann & Hoverson Company, Milwaukee, Wis.; E. W. Devoe & C. T. Reynolds Company, New York.

The committee in charge of the smoker were W. H. Bennett and John F. Parker.

#### The Chicago Delegation

to the convention was, as usual, a large and enthusiastic one, the party consisting of 75 delegates, manufacturers' representatives and others, who boarded the Chicago & Alton train leaving Chicago at 2.30 Monday afternoon, reaching Bloomington at 6.30 o'clock the same evening. The committee having in charge the arrangements had provided a bountiful lunch, which was served *en route*. Badges were distributed bearing the inscription "C. R. H. A., Bloomington, Ill." In the center of the badge

were the words, "I am from Chicago." Reaching Bloomington, the delegates, preceded by a local band, were escorted to the Illinois Hotel, the convention headquarters. The trip was a most enjoyable one and great credit is due the committee having the matter in charge, which consisted of Wm. Gormley, G. R. Lott and W. H. Bennett.

#### ADVERTISING.

BY D. Y. McMULLEN, FREEPORT.

This is a great subject and lifts the curtain for the imagination to roam to the ends of the earth. We can picture it in its multitudinous forms and curious devices, but we forbear. In the allotted time it would be impossible to exhaust or dissect this far reaching problem, and if I should attempt to lead you through the vast swamps of theoretical and practical advertising, both in this and other countries, you might fear that one of my stature would become entangled in the brush and never come out.

I do not intend to discuss the general theory only as it touches the practical subject so far as it relates to the business represented here by the members of this association. Please remember that these are individual opinions, possibly by one who has had more than ordinary opportunities to gather and digest thought on this line, but an individual nevertheless, with no pretensions to speak *ex-cathedra*. Men who write for or speak to large numbers have better opportunities to herald their views, but they are only the product of one brain after all.

#### CONSTITUENCY.

The first point to consider is our constituency. Who are the people we want to reach? Many an advertiser shoots the tree full of shot and never hits the game, just because he fails to study the character of the individuals whom he wants to reach. Study your audience. The World's Fair directors provided guides before the opening of the great fair, but the great reading, thinking American people needed them not, and in two weeks none were to be seen. There is a deep, still current of general intelligence among the American people, and it demands something akin to its nature, or the producer of words finds them returning to him empty.

Try to swim against the onward flow of the tide in some of our great rivers, and you find yourself unequal to the task. Easier, however, is it than to progress in the face of the vast tidal wave of intelligent public opinion. The moral, respectable and educated people of Illinois, as a rule, own the property, buy the goods and give volume to trade. Those who fail to come under this description are anxious to have the impression go abroad that they lay claim to at least semi-respectability. The pimply dude attached to the damp end of a cigarette buys very few goods and seldom pays for what he gets possession of. The American people, and especially those of this great State of Illinois, weigh words as well as Nails, measure men's characters by their attempted wit and resent the first approach at placing before the family circle the semi-indecent or language that bears the marks of double meaning. More and more every year the millions in our "harvest field" are demanding clean words, respect for their wishes, and straight forward, honest, wholesome presentation of what we have to say, that is to go before their families.

#### THE SUCCESSFUL ADVERTISER

cannot ignore the fact that men and women, as a rule, know what they want, intelligently test the merits of an article of merchandise and utterly repudiate the shams and fakes. It is good business policy to recognize these facts, and as intelligent thinking business men we are under obligations to ourselves, the communities in which we live, our families and our God to elevate public sentiment as much as possible.

There is another class who may not have any claim to education and very little to culture, but who are possessed of a great fund of good common sense and can puncture a bombastic bubble with a celerity and directness that is astonishing. The Nevada girl is a representative of this class. She asked for "Hoes" in a gen-

eral store, when the dudish "tenderfoot" began to dilate upon the blue and red silk stockings, but was halted with the remark, "You idiot, I want a Hoe."

There is a small and ever decreasing minority that can be wheedled and led by what is not legitimate advertising. These will not support any business and are as variable as the wind. May their shadows ever grow less.

#### GOOD GOODS.

The second point to be considered in advertising is what we have to offer. The consummation of the whole business is to make sales, and the first essential is to have good goods. Without these all our efforts are vain. The best advertising in the world is a first-class article, at a fair price, properly presented by a salesman who knows what he is talking about and has common sense enough to stop when he has said enough.

The ground work of the whole process known as advertising is a well selected, clean, properly arranged stock of such goods as will supply the wants of the pur-



D. Y. McMULLEN.

chasers, consisting of the elements described above as customers, better known as the "dear public."

#### HOW TO ATTRACT.

The question we have here to answer is how can we attract the attention of the largest number of people to these goods at the least possible expense. A clear knowledge of what we have to offer (that is the leading characteristic and the purpose of the article), coupled with easy politeness, are the accompanying essentials to a presentable stock.

Without attempting to enumerate the vast array of mediums through which the message can be carried to the public ear, I will name one fundamental rule that I have always ascertained to be correct. It is that the medium upon which the customer places the most value is by all odds the best. The man who will pay for and scan every article in his church paper would throw away as unworthy of his attention the very same matter if handed him gratis in another form at a county fair. The dodger thrown into a vestibule, whether it be yellow, red or green, is usually consigned to the waste basket without examination or comment. In my opinion there are only

TWO LEGITIMATE METHODS OF GOOD ADVERTISING, outside of good goods, properly offered with personal politeness. One is to address the customer direct by letter, catalogue or such form of circular as will convey the impression at once that it is important. The other is a properly worded advertisement, with or without illustrations, changed at frequent intervals and printed in a periodical daily, weekly or monthly, that the customer thinks enough of to subscribe and pay for.

Bill boards, frames of cards in hotels and barber shops, hotel registers, umbrella tops, horse covers,

fences, street cars, theater programmes and a world of similar literature are only valuable to the man who has arrived at a point where he is the leader and his name is looked for on all sides as a matter of course. The average dealer gets little or nothing from this class of advertising. It is a rare case when good comes of it. The board, if properly erected and appropriately covered, is good for a time. All advertising when it becomes stale loses its edge and has little more value than a last year's bird nest. Advertising that cannot be freshened can safely be classed with the very poorest. Just now the advertiser is in honeymoon with the calendar, but I fear he will be like the man who said he loved his bride so well he wanted to eat her the first year, and wished he had the second. The expense far outweighs the benefits.

#### CHILDREN

are bright and sparkling messengers of information we wish to convey. If you want a mother to feel attracted to your store, just have a kind word and look or some little souvenir for her child. Train yourself to notice the children and you will be a better man and sell more goods. The little tots may make you nervous and sometimes pull articles down, but they are the telegraph lines to the mothers' hearts and the answers will come back prepaid. Local church papers are comparatively useless, but fair treatment and an occasional donation to any church or charitable society is bread cast upon the waters. It shall be seen after many days.

#### HOW SHALL WE WORD OUR ADVERTISING?

Say what you mean and mean what you say. Do it in as few words as possible and say something. Withering sarcasm about the other fellow across the street does not interest your customers and many of them might think that the cat-o'-nine-tails was wielded by the wrong person. Listing special articles for sale is strong advertising, but giving prices, as a rule, is objectionable. Do not load the message with too much matter. A model advertisement was that of a seed house for which they paid \$200 as a prize to the writer, who was a youth of seventeen. It was this: "The Sower Has But One Chance."

"If possible, as much as lieth in you live peaceably with all men." Never waste words on your competitors, but let your advertising convey information. Describe something, offer a definite article for sale, call attention to improvements, carry a message, not a blank.

Study new plans, fresh attractive methods, and, above all, avoid sameness.

With an appreciative public, a full and complete stock, good live newspapers, a warm and receptive feeling for all who may call on you, especially the newspaper men, a thorough knowledge of your business, you should succeed in this wondrous prosperous land. If you cannot, then the deluge.

(Latest by Telegraph.)

The convention was called to order Wednesday morning at 10 o'clock. L. M. Reeves of Peoria read a paper entitled "The Hardware Window," which was followed by a paper by D. Y. McMullen of Freeport entitled "Advertising," which we give above. This was followed by a paper by F. F. Porter of Chicago entitled "Co-operative Buying." The Question Box was then opened and the questions submitted were freely discussed. The formation of local organizations was urged. The election of officers and the place of next meeting will be decided Wednesday afternoon.

The wholesale and retail Hardware business formerly conducted by Emil Garnich, Ashland, Wis., has passed into the control of a new concern, to be known as Emil Garnich & Sons, Mr. Garnich, the senior member, having taken his sons, William and Irvin Garnich, into partnership with him. Mr. Garnich is one of the pioneer Hardwaremen of Wisconsin. Thirty years ago the partnership of Leihy & Garnich was formed, continuing for 20 years, when Mr. Leihy retired. Since 1891 the business has been conducted by Mr. Garnich alone.

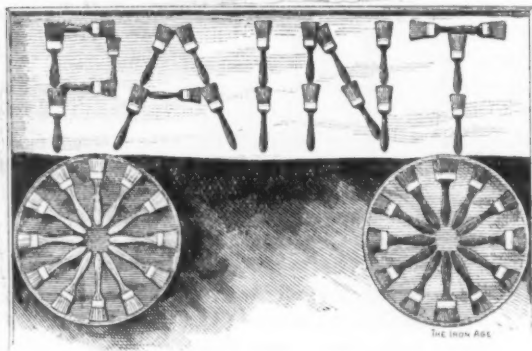


## SPORTSMEN'S SHOW.

THE Garden is now in possession of the Executive Committee of the National Sportsmen's Association and carpenters, decorators, scenic artists and other workmen preparing for the ninth annual Sportsmen's Show to be given in the Madison Square Garden, February 21 to March 7, inclusive. On Friday evening, February 20, the Canadian Camp Fire Club will give a banquet in the Garden to about 200 or more of its members and their invited guests.

## DECORATING A PAINT WINDOW.

THE upper part of a Paint window was decorated some time ago by the Marshfield Hardware Company, Marshfield, Wis., in the manner shown in the accompanying illustration. Across the top of the window was placed a strip of white cloth, on which the letters



*Decorating a Paint Window.*

comprising the word PAINT were made of Brushes, as shown. Below this were hung two barrel hoops, which were covered with cloth, on which were fastened Brushes arranged in the manner illustrated. The lower part of the window was filled with cans, pails of Paint, &c., in much the usual style.

## KEYSTONE HARDWARE COMPANY.

IN our last issue we announced the organization of a new Builders' and Shelf Hardware manufacturing concern at Reading, Pa., under the style of the Pennsylvania Hardware Company. The name, however, has since been changed and the company will be known as the Keystone Hardware Company instead. The new company have a capital of \$200,000. The plant of the Rick Bros. Hardware Company, including real estate, machinery and tools, has been purchased and will be put into operation at once. The organizers of the new company are all persons largely interested in the Reading Hardware Company, M. Harbster being president, John E. Harbster being secretary, John G. Mohn and Isaac G. Treat directors of that company, while A. E. Gery and H. L. Boas are large stockholders. The connection of these gentlemen with the new company will in no way change their interest or position with the Reading Hardware Company; in fact, the new concern will be run in harmony with the interests of the Reading Hardware Company and in no wise as a competitor.

MORSE CHAIN COMPANY, Trumansburg, N. Y., have recently increased their capital stock \$70,000, making it at present \$200,000. This action was taken to enable them to take care of their rapidly growing business in the Power Chain line.

THE FRANKLIN MOORE COMPANY, Winsted, Conn., have sold their interest in the manufacture of Wood Screws, together with their stock and good will, to the American Screw Company, Providence, R. I. This will in no way affect their position as manufacturers of Bolts, the production of which will be continued as heretofore, with some additional lines

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## BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE, }  
NORFOLK ST., LONDON, W. C., Jan. 24, 1903. }

## The Week's Trade.

THE good spirits with which we started the year are gradually simmering down, for trade is not good, particularly at home. Retail traders experience a marked shrinkage of business as compared with a year ago, and there is distinctly a tendency all round to curtail expenditure. This is in part due to increased taxation. A large number of travelers, however, have not yet resumed their journeys, and in a week or two we shall know more accurately what is the exact position. There has been some slight improvement in Builders' Ironmongery, Agricultural Hardware, Cycles, Spades, Shovels and Edged Tools. The brass foundry trades, too, have opened the year well, particularly for Cocks, Taps, Unions, Hydrants, Window and Door Furniture. The electro plate branch is still dull, but the low price in silver stimulates the silver trades. The price of silver is again almost at minimum point. At the end of November it stood at 21 11-16 pence per ounce; then it advanced, but has again gone back almost to that point. There are members of the trade who remember when silver stood at 5 shillings per ounce, and there was a duty on it of 1 shilling 6 pence per ounce. Now there is no duty, and the price is under 2 shillings per ounce. There is a general expectation both in Birmingham and Sheffield that there will be in the near future a considerable expansion in the sterling silver and plated trades. The season so far cannot be considered satisfactory for the makers of Heating Stoves and Apparatus. We have had two or three spells of exceedingly cold weather (as, for example, last week when I reported the Thames to be frozen), but in general the winter has been a mild one. February, however, is celebrated for its frosts, and perhaps there will be another stimulation of trade in heating apparatus. The railway companies have lately been placing orders very freely for Carriage Fittings, Boiler Tubes, &c. Metal Rollers and Tube and Wire Drawers meet with an improving demand both on home and overseas account. This is probably due to an expectation of higher prices for copper, notwithstanding the unfavorable estimates of the copper position which come regularly from the United States. The Turkish and Indian demand for Sheet Copper is well maintained, and large quantities of high conductivity Copper in the form of tape and wire for electrical purposes are still going into consumption. The Cycle and Motor trades are distinctly looking up. Most of the larger firms are well supplied with orders for machines of the medium and cheaper grades, but there is little demand for high class Cycles. The Lock trade is exceptionally active, as a consequence of the exhaustion of stocks during the strike (which is now, happily, ended), but the Bedstead branch is distinctly quiet for this time of the year. Screws, Rivets and Cut Nails are selling unusually well, but at prices which are not enticing. The makers of Edged Tools and Joiners' Tools speak hopefully of their prospects. On overseas account orders are coming in from South Africa and India in large quantities. New Zealand is also buying freely, but the Continental trade is quiet and Canada is taking very small parcels. In the Cutlery trade those firms whose principal business has been with the home market or Australia are suffering severely from lack of orders. Since the close of the South African War the demand for machine made Table Knives and Carvers has fallen off seriously. In anticipation of sales when peace came, distributors throughout the country laid in good stocks. They have them still on their hands. The Australian drought has practically destroyed the demand for Sheffield goods, and as a matter of fact some firms are doing less than during the time of the commercial collapse out there. American manufacturers of Cutlery are taking from Sheffield increasing quantities of machine made Table Knives and Carvers, ground and finished ready to be put into the hands of the cutler. Americans are also buying more freely stag and other hafting material. Going out in this stage both blades and handles are admitted duty free.

## A Trade Mark Protected.

It is of the greatest importance that all American manufacturers of Hardware and Cutlery who are building up a connection in South Africa should look to their trade-marks with diligence. On this point it is worth noting that the Supreme Court of Natal has just delivered an important judgment on an application made by Lockwood Bros., the well-known cutlers of Sheffield, for an order dismissing an application made by Arndt & Cohn of Hamburg and London for the registration of a trade-mark in Natal under the metal classes. The Chief Justice holds Lockwood Bros. to be the proprietors of the trade-mark in question and accordingly the objection was sustained with costs. This verdict reminds me of an old story that used to be going the rounds of Sheffield, of a European who was courteously shown round the works of some well-known Sheffield cutlers. Among other things he saw the trade-marks. Said his English guide, "We have had that trade-mark for 200 years." "Is that so," said the European; "we have had it for 20 years!"

## Another Legal Test.

The solicitors of R. P. Houston & Co., the independent shipping line, who are attempting to break down the South African shipping ring, have issued a writ against the various companies who form the ring in question, claiming damages, 1, for illegal conspiracy; 2, inducing persons to break contracts; 3, inducing persons not to make contracts; 4, coercing and intimidating persons; 5, illegally boycotting, and, 6, defamation. Now that the ship owners are falling out, possibly exporters may come by their own.

A safe index to the general state of trade is to be found in statistics of the unemployed. I append a Government statement showing the number returned by trade unions of unemployed members for each month of the year. It will be seen from this table that just as the prices of commodities show a downward tendency, the proportion of unemployed shows an upward tendency. It may be assumed for purposes of calculation that 5 per cent. unemployed represents about 700,000 unemployed workers, or a population of nearly 3,000,000 persons seriously affected by bad trade conditions.

End of—	—Societies.—		Unemployed. Proportion in	
	No.	Members.	Number.	Proportion in 1900-01.
January, 1902.....	151	553,218	24,470	4.4 4.0
February .....	151	561,708	24,072	4.3 3.9
March .....	224	551,270	20,241	3.7 3.6
April .....	224	550,958	21,340	3.9 3.8
May .....	224	549,023	21,926	4.0 3.6
June .....	224	544,893	22,832	4.2 3.4
July .....	222	550,169	21,859	4.0 3.4
August .....	222	551,565	24,549	4.5 3.9
September .....	221	553,870	27,522	5.0 3.7
October .....	223	548,442	27,270	5.0 3.7
November .....	224	549,197	26,454	4.8 3.8
December .....	224	552,415	30,302	5.5 4.6

## Trade in the Bahamas.

Last year, among the imports admitted duty free into the Bahams were Fertilizers for agricultural uses to the value of £6616, and shipbuilding stores to the value of £1646. Otherwise the following imports may be noted:

	For 1901 and first quarter of 1902.	For 1900.
Tinware, Hardware, &c.....	£13,915	£16,357
Machinery .....	16,514	8,912
Lumber and Shingles.....	3,886	12,689
Kerosene Oil.....	3,681	3,353

The decrease in the imports of lumber and Hardware is attributable to the cessation of the demand caused by the temporary expenditure of the Florida East Coast Company and of building societies in Nassau.

Johnson Hardware Company, Tampa, Fla., have been incorporated with a capital stock of \$10,000. The company will do a general Hardware business at wholesale and retail. The following are the officers of the corporation: Samuel L. Lowry, president; Henry W. Johnson, vice-president; O. D. Royall, secretary and treasurer; Samuel L. Lowry, Henry W. Johnson and O. D. Royall, directors.



## Hardware Organizations.

The following meetings of State Retail Hardware Associations will be held during the next few weeks:

INDIANA, February 17, 18 and 19, Indianapolis.  
NORTH DAKOTA, February 18 and 19, Fargo.  
KENTUCKY, February 24 and 25, Louisville.  
NEBRASKA, February 24 and 25, Lincoln.  
OHIO, February 24, 25 and 26, Columbus.  
MINNESOTA, February 26, 27 and 28, Minneapolis.  
PENNSYLVANIA, March 3 and 4, Pittsburgh.  
NEW YORK, March 11 and 12, New York.  
NATIONAL ASSOCIATION, March 17, 18 and 19, Chicago.

### North Dakota Retail Hardware Association.

The North Dakota Retail Hardware Association have just issued the souvenir programme prepared for distribution in connection with their sixth annual convention, which will be held in Fargo on February 18 and 19. The programme is of a very attractive character, finely printed, and contains about 175 pages. The principal part of the contents is advertising, many well-known manufacturing and jobbing concerns being represented. Many half-tone illustrations are also given, indicating the progress of the State from Territorial days to its present prosperous condition. In this connection views are presented of prominent public buildings and business establishments, as well as residences in Fargo, Grand Forks and other cities. Portraits are also given of the officers of this enterprising and successful association. A list of the Hardware merchants of the State is also given, membership in the association being indicated by an asterisk. An inspection of the list shows that the organization comprises a very large proportion of the Hardwaremen of the State. The souvenir is a very creditable production, and will doubtless be highly valued.

### Retail Hardware Association in Connecticut.

The need of an organization of the retail Hardware merchants of Connecticut has often been referred to by individual Hardwaremen, but the effort has not heretofore been made to form an organization. An appeal, however, which promises well is now being made by the Hartford Hardware Association, with a view to bringing the merchants of the State together for the purpose of considering the feasibility of organizing an association and taking such steps as may be desirable to that end. It will thus be seen that the effort is inaugurated under favorable auspices, as this association is in successful operation and has connected with it merchants of recognized standing. With a view to bringing the matter to the attention of the trade, the following circular was recently sent out to merchants throughout the State by A. H. Abbe, president of the Hartford Hardware Association:

HARTFORD, CONN., January 31, 1903.

Dear Sir: It has often been suggested by different Hardware dealers throughout the State of Connecticut that a State Association on lines similar to those organized in other States of the Union would be of great advantage to the Hardware trade throughout Connecticut.

No one has yet seen fit to take up the matter of organizing such an association. At a meeting of the Hartford Hardware Dealers' Association a short time ago the matter was discussed and all agreed that if such an association could be formed it should be done, and in order that the sentiment of the trade may be expressed I have addressed this letter to all Hardware dealers of whom I have knowledge throughout the State, and would ask that you express your opinion upon the matter by answering the questions on the inclosed blank.

The Hartford Hardware Association, composed of dealers from Hartford and New Britain, have found their local association of great benefit to them. We have no doubt that such an association would be of equal benefit to every dealer in the State.

Hoping that this suggestion will meet your approval, and for an early reply, I remain, &c.

In connection with the circular a blank was also sent containing the following queries, to which answers were solicited:

Kindly answer the following questions and mail the

same to Chas. L. Way, secretary, Hartford, Conn., at as early a date as convenient:

*Are you in sympathy with a movement to organize a Connecticut Retail Hardware Dealers' Association?*

*Will you attend a meeting on a day to be named sometime during the next four or six weeks, to organize such an association?*

*About what date would you suggest for this meeting?*

*Would you prefer the meeting to be held in Hartford or New Haven?*

These circulars were sent out to Hardware merchants throughout the State whose names were in possession of the association, and the replies already received have been exceedingly satisfactory. They indicate a general desire on the part of the merchants to have an association organized, so that there is little doubt that a meeting will be held for this purpose at an early date. The committee in charge of the matter are aware that there are many merchants in the State to whom the circular was not sent, but any who are interested in the subject are most earnestly invited to communicate with Charles L. Way, secretary, &c., Hartford, Conn., with such suggestions as they may desire to give.

The conditions in the Hardware trade which prevail in New England are in some respects quite different from those which are found in the Western States, where the association movement has been attended with such marked success. There are, however, at least as many evils to be corrected and as much need for Hardware merchants coming together. There is little doubt that an organized and united effort will result in accomplishing much good.

### New York State Association of Retail Hardware Dealers.

John R. Taylor, Little Falls, N. Y., secretary of the association, in connection with the arrangements he is making for the annual meeting at the Astor House, New York, March 11 and 12, is endeavoring to awaken an interest in the work of the association among the merchants who are not as yet identified with it. In order to impress upon them the reasons for joining the association and lending their influence to the furtherance of its plans, he has issued a circular, extracts from which we give below. It will thus be seen that he calls attention to some of the existing evils, among which he refers to the competition of department stores and catalogue houses, and also to some of the evils connected with the competition of the jobbing trade. From this circular we make the following extracts:

For the last few years the Hardware trade has been drifting to large department stores and catalogue houses, and a large amount of the cash trade is going to the cities that naturally belongs to the local merchants. . . . Now these large houses, by reason of large capital and buying in large quantities, are able to purchase of the manufacturer much lower than a majority of small buyers, while in the aggregate such purchases do not equal in amount the purchases of the State merchants, which are made from time to time as the trade demands. This fact is lost sight of by the manufacturer, who only sees the orders as they come in, and when an order unusually large is received it is accepted, although an additional 10 per cent. is allowed with the usual cash discount, f.o.b. destination. Now an order for \$10,000 in Mechanics' Tools is not to be turned down by the manufacturer at the price named, even though close to cost, by a catalogue houses whose territory of trade covers several States; but let 20 or 30 merchants send their orders to this same manufacturer for the same line of Tools in small orders, although the aggregate value would be double the single order, it would not be accepted, and the retail merchants, as individuals, would be notified that the best prices they could make would be so and so.

As a remedy for this could not the merchants, as a unit, say to the manufacturer, place all retail houses on the same basis, be they large or small, or let the manufacturers establish a price limit that certain merchandise is to be sold at, with a fair margin of profit to the retailer; put the catalogue houses on the same basis, and the retailer can meet such competition. There are jobbing houses with a retail department, two-thirds of whose gross receipts are from the latter, although they are called jobbers, and if they were compelled to rely on the jobbing trade they could not exist. This prac-

tice of jobbing Hardware to consumers by so-called jobbing houses is unhealthy, not only to the merchant, but to the manufacturer, and as time rolls on will bring ruin to a once profitable business.

It is the practice of large jobbing and catalogue houses to solicit trade by circular letters, by giving a commission to express agents and freight agents, and some have even approached the officials in the post office department for a good word in their behalf. But the Government called a halt. The railroad officials have notified employees that such business is detrimental to trade and must be stopped, and any letters to that end be forwarded to the general office for proper answer.

Every retail merchant should make himself a committee of one in looking after his business, meet all fair competition, discourage all side lines that will affect his neighbor's business, join the association, attend the meetings and lend his influence and name to his State association—for in unity there is strength, and in strength much can be accomplished. There are 2000 merchants in this State outside of New York City, and the capital invested is \$150,000,000. You are one, and I appeal to you to get in line. You have ideas that we wish to learn. By many being present, some of the vexatious questions may be answered; the little frictions that occur between neighbors in the same line of business in your town and vicinity may be explained, and you may find that your neighbor is quite a man and has a reason for all his actions.

#### Indiana Retail Hardware Dealers' Association.

In the programme for the annual convention of the Indiana Retail Hardware Dealers' Association, which takes place February 17, 18 and 19 at the Hotel Denison, Indianapolis, Secretary Corey of Argos tersely addresses the merchants of the State, under the head of "A Rare Combination of Business, Profit and Pleasure," as follows:

We herewith present you programme of our annual meeting and extend to you a cordial invitation to attend and assist in discussing and deciding important questions, get acquainted, swap experiences, hear able men treat business subjects, &c.

Wood's Garnishee and Exemption Bill explained and action taken. Are you not tired of encouraging dead beats? Are you in favor of keeping the present Lien Law in force? Do you want to save from 25 to 65 per cent. of amount paid for insurance? Catalogue House Question demands intelligent, concerted opposition. Other matters equally important.

The smoker, evening of the 17th, given by the association, will be a very pleasant affair.

The banquet by the manufacturers and jobbers on evening of 18th, will be worth the trip alone. The Columbia is one of the finest club rooms in the United States.

The Indiana Association is one of the strongest and best among all State organizations; you should be proud of this fact and glad of the privilege of becoming a member.

We have every reason to believe this will be the best, largest and most enthusiastic meeting in our history; you certainly cannot afford to miss it. We need you—you need us.

Inclosed find programme and blank application. Read the one. Sign and forward the other to the secretary, and you will be certain to have a seat in our convention and around the festal board.

You can send your check or pay at the meeting. It is important, however, that we have your name; this will also insure you a copy of the "National Manual" by return mail, a book of nearly 200 pages, free of expense to you.

Buy ticket to Indianapolis, pay full fare one way only. Take a receipt from your ticket agent showing same. Deposit this with the secretary when you arrive. This will entitle you to return at one-third fare.

You can bring your clerk or friends on same plan and same terms.

A very interesting programme has been provided and the meeting will doubtless eclipse those previously held. A number of live trade topics will be the subjects of papers, among these being the following: "Evolution of the Association Idea," by Sidney P. Johnston of Chicago; "Mutual Fire Insurance," by F. B. Fowler, secretary of the Indiana Lumbermen's Mutual Insurance Company, of Indianapolis; "Modern Methods and Future Dangers," by Sharon E. Jones, Richmond; "Proposed Legislation to Establish Honest Business Methods," by A. J. Mears, Indianapolis; "Mistakes of Retail Stove Dealers," by H. A. Cole, formerly president of the Iowa Retail Hard-

ware Dealers' Association; "Advertising that Brings Results," by E. M. Bush of Evansville and H. P. Townley of Terre Haute.

#### Minnesota Retail Hardware Association.

The officers of the Minnesota Retail Hardware Association are looking forward to a very interesting meeting on the 26th, 27th and 28th inst. at Minneapolis. This is one of the very strongest Hardware associations in the country, with a membership representing a large proportion of the merchants of the State. Their conventions are usually largely attended, and the coming meeting will doubtless equal, if it does not surpass, former gatherings in the matter of attendance. The programme which has been prepared is a very attractive one, both from its business and social standpoints. The following papers on trade topics have been arranged for: "Trade Abuses," by E. Houghtaling, Fairmont; "Relation of the Jobber to the Retailer," by W. B. How of Duluth; "Retail Merchant as an Educator," by C. D. Decker of Austin; "Retailer's Advertising," by W. E. Davis of Minneapolis; "Shop Keeper vs. Merchant," by H. L. Chaffee, a commercial salesman, who some years ago won first prize in a competition conducted by *The Iron Age* on "Causes of Failure Among Dealers." During the convention there will also be a meeting of the policy holders of the mutual insurance company connected with the association. There will also be several addresses on the subject of insurance.

#### THE WIRE GOODS COMPANY'S CATALOGUE.

THE WIRE GOODS COMPANY, Worcester, Mass., issue Catalogue No. 5, containing 182 pages, devoted to General Wire Hardware, including Bright Wire and Brass Wire Goods, Hat, Coat and Ceiling Hooks, House Furnishing Goods, Wire Nails, Tacks and Staples, Novelties and Specialties in Wire. The company devote themselves entirely to the production of Wire Goods, and keep in stock at all times upward of 2800 different articles. They also carry in stock different styles of goods to satisfy individual tastes, instances of which are 119 different styles and finishes of Wire Coat and Hat Hooks, 278 different articles of Bright Wire Goods and 23 different styles of Garment Hangers. The company have endeavored from time to time to add to their line all kinds and classes of goods made of Wire, and feel that they are headquarters for all classes of Headed, Threaded and Bent Wire Work. One of the new features of the catalogue is a schedule of sizes of Bright Wire and Brass Wire Goods. This covers three of the pages of the catalogue, which are 8 x 11 inches in size. The company have devoted much time to the production of labor saving machinery, which permits them to do special work at a very moderate price. Specialties, including every class of product which are not standard in the market, are made to order for customers. The catalogue is well arranged, finely printed and substantially bound in cloth.

#### THE DEFIANCE LANTERN & STAMPING COMPANY'S CATALOGUE.

THE catalogue of the Defiance Lantern & Stamping Company, Rochester, N. Y., includes several new lines of Lamps and Lanterns which they are placing on the market. In addition improvements have been made in goods previously manufactured. The first aim of the company has been to supply Lamps and Lanterns which will give a steady, bright light and stand any wind, after which attention has been given to strength of construction and neatness of appearance. The lines of goods illustrated include Tubular and Dash Lanterns, Searchlights, Side, Street and Hanging Lamps, Railroad Lanterns, Station Lamps, &c.

THE AMERICAN AXE & TOOL COMPANY met in Pittsburgh last week and re-elected the old Board of Directors. The large new plant of the concern under erection for some time in the Pittsburgh district is almost completed.



## REQUESTS FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

Foy & Simmons have lately entered business at New Bern, N. C., as retailers of General Hardware, Stoves, &c., and will appreciate catalogues and price-lists relative to these lines.

Edwin B. Michaelis, for the past 11 years employed by Andrew Hoffman, Hardware merchant, will embark in business on his own account during the coming spring at 4060 State street, Chicago. Mr. Michaelis will value catalogues and quotations pertaining to Hardware, Tinware and Electrical Supplies.

Fowler & Doland, dealers in Hardware, Sporting Goods, &c., Salem, Mass., advise us that their collection of trade literature was ruined by water a few nights since. They will accordingly be glad to receive from manufacturers printed matter which will enable them to re-establish their trade library.

Ernest A. Gibbons, formerly junior partner of John V. Gibbons & Bro., New York, which firm have been dissolved, has just opened new quarters, corner Hudson and Morris streets, Jersey City, N. J., where he will handle Engineering Supplies, Ship Chandlery and Heavy Hardware. Mr. Gibbons requests catalogues and quotations from manufacturers in the above lines.

## STREVELL-PATERSON HARDWARE COMPANY.

THE business of Geo. M. Scott-Strevell Hardware Company, Salt Lake City, Utah, dealers in complete lines of Hardware and allied goods, have decided on some important changes in the business and method of conducting it. The name of the company hereafter will be Strevell-Paterson Hardware Company. One important change is the abandonment of their retail department. A site has been purchased for a new building at Third South and Third West streets, on which a new building will be erected to cost not less than \$50,000. They have also secured a franchise for a railroad switch, so that cars can be run directly to their store. The following is the new Board of Directors elected by the stockholders: O. J. Salisbury, W. S. McCormick, W. V. Rice, George T. Odell, George M. Scott, James H. Paterson and C. N. Strevell. The following officers were elected: C. N. Strevell, president; James H. Paterson, vice-president and treasurer, and W. B. Outcalt, secretary. Mr. Strevell and Mr. Paterson will manage the company's affairs. When the new building is ready they will sell their present building and retail store on Main street and devote themselves exclusively to the wholesale trade. The present capital is \$200,000, with a surplus of \$50,000, which it is proposed to largely increase for the purpose of creating a large concern capable of supplying the inter-mountain region with a large proportion of its Hardware. Some portions of the business which they decided to close out have been sold to former employees; for instance, the Sheet Metal and Furnace departments and the Crochery department.

## TRADE ITEMS.

A. N. ABBE, purchasing agent for the American Hardware Corporation, New Britain, Conn., has just returned from a trip to the West Indies, touching at points in the Leeward and Windward islands, Jamaica, Cuba and Bahamas, and visiting the scene of the eruption at Martinique and the battle ground at Santiago.

At the annual meeting of the stockholders of Butler Brothers, Chicago, St. Louis and New York, the following officers were elected for the year 1903: President, Edward B. Butler; vice-president, Homer P. Knapp; secretary, Walter Scott; treasurer, John R. Schofield; directors, Edward B. Butler, Homer P. Knapp, Walter

Scott, John R. Schofield, Homer A. Stillwell, Frank S. Cunningham, Jacob H. Schoonmaker.

At New Castle, Pa., on February 5, officers were elected for the New Castle and Oil City branch of the United Hardware Company, as follows: Charles J. Kirk of New Castle, president; S. S. Bryan of Titusville, treasurer; Charles H. Church of Titusville, secretary; Joseph Seep and S. S. Bryan of Titusville, H. P. Weller of Erie, Charles J. Kirk of New Castle and E. E. Seep of Oil City, directors.

THE BURDITT & WILLIAMS COMPANY, Boston, Mass., will open a new store about March 1 at the corner of Summer and High streets, Boston. They will occupy two floors and the basement of this property for their store, which, they advise, us, will be thoroughly up to date in every way. The new location is an excellent one for a retail Hardware store, as it is near the South Station and on a direct route between that station and the shopping district of the city. The company will also continue to occupy their large store at Dock square, where on April 1 they will have been located for 43 years.

ETNA MFG. COMPANY, Taunton, Mass., is the name of a new company recently organized to make Twist Drills, of whom F. Herbert Smith, long in the employ of the Nicholson File Company, Providence, R. I., is the president. His many friends will wish him success in the new enterprise.

THE LUFKIN RULE COMPANY, Saginaw, Mich., New York branch 280 Broadway, in charge of H. G. Hollis, have increased their capital stock from \$100,000 to \$200,000. The company are about finishing a large addition to their plant and are equipping it with the most modern machinery for producing high grade goods in their line.

R. K. CARTER & Co., 66 and 68 Reade street, New York, and Pittsburgh, have moved their Pittsburgh office from the Carnegie Building to more commodious quarters in the Lewis Block. This move is made necessary by the increase in their business done from the Pittsburgh office and their inability to secure additional room in the Carnegie Building. The office continues to be under the efficient charge of W. B. Paulcraft.

THE SMITH & HEMENWAY COMPANY, 296 Broadway, New York, have enlarged their office more than three times its original size and invite the trade to visit their new sample room, where the proper attention and courtesies will be shown them by their force. This change has been made necessary by the increase in their business in the past year.

C. T. STORK, manager of the New York office, has returned from attending the annual meeting of the Columbian Hardware Company, held at the general offices, Cleveland, Ohio. The report submitted, we understand, shows that this company are in an exceptionally prosperous condition. They are also enlarging their line and it is expected that a number of new articles of manufacture will be announced between now and July 1. The following are the officers of the company for 1903: Lester A. Cobb, president; Ludlow S. Sherwood, vice-president; Wm. M. Powell, secretary and treasurer; H. J. Valentine, superintendent, and C. T. Stork, manager New York branch.

THE stockholders of the Morris Hardware Company of Youngstown, Ohio, held their annual meeting on Monday, February 9. The following Board of Directors was elected: H. M. Garlick, J. H. Morris, W. J. Whitworth, Bert H. Coe, W. H. Park, L. E. Cochran and Frank Hitchcock. The directors organized by electing H. M. Garlick president; Frank Hitchcock, vice-president; J. H. Morris, general manager; Bert H. Coe, treasurer; W. J. Whitworth, secretary, and J. B. Adamson, chief clerk. A gratifying dividend was declared, after adequate provision was made to increase the surplus or reserve fund, which has already reached a large figure. The business handled by this company during the past year surpassed in magnitude all previous records. The amount of the sales exceeded by \$100,000 those of any previous year, and the profits were augmented in a like proportion.

# Wisconsin Retail Hardware Association.

## CONCLUDING REPORT.

THE spirit of good fellowship which prevailed among the delegates who attended the annual gathering of the Wisconsin Retail Hardware Association at Milwaukee last week was one of the most pleasing, if not the most prominent, features of the convention. The delegates met, not as rivals, but rather as brothers, each seeming to feel that the interest of every other was in his keeping and whatever was good for one was good for all. It was the seventh annual gathering of the association and probably the most enthusiastic one ever held. Fully three-fourths of the entire membership were present at the opening session and many others, including quite a number of new members, were in attendance before the convention adjourned. The ardent interest in the event, too, was not confined to the members alone, but was shared in large degree with the manufacturers and jobbers, who were present in force, not a few of them attending the opening session.

### Address of Welcome.

The convention was called to order shortly after 2 o'clock on the afternoon of February 4, President O. P. Schlafer presiding. The delegates were welcomed to Milwaukee by Secretary Richard B. Watrous of the Citizens' Business League, President Alvin C. Kletzsch of the league being prevented from attending by illness. Secretary Watrous spoke as follows:

For some years your honorable association has been regularly tendered invitations by the Citizens' Business League to meet in Milwaukee for your annual convention. The alacrity with which you have accepted those invitations, tendered as they were by simple words from the Hardware jobbers and manufacturers of the city, we take it is the most convincing evidence that you have found the "bright spot" city an ideal place in which to assemble for the transaction of the important business of your association.

For the first time I think your programme calls for an address of welcome by the Citizens' Business League. Our president, Mr. Kletzsch, was to have fulfilled that pleasant duty, but he has been indisposed for some days and he has delegated that task to me as secretary of the league. It is a duty I most gladly undertake, though I know if Mr. Kletzsch could have been with you he would have fulfilled the mission much more gracefully than I can hope to. We do tender to you a most cordial welcome and we trust that your convention will not only be profitable from a business standpoint but extremely pleasant.

The programme which has been prepared or introduced contains many social pleasures for you during your stay here.

The Citizens' Business League is one of our civic organizations, composed of representatives from all of our great commercial, jobbing and manufacturing interests of Milwaukee. For several years we have been extending welcomes to hundreds of assemblies and to hundreds of thousands of visitors from all parts of the world. It gives us particular pleasure to welcome to our midst the various State organizations, especially those similar in character to yours, composed as it is of business men from all parts of our State of Wisconsin.

We are proud of our city of 300,000 inhabitants; proud of its advancement in trade, its annual output of manufactured product aggregating \$200,000,000 last year. Its jobbing business aggregates \$300,000,000. We believe no State in the Union has a better metropolis than the State of Wisconsin. We want you take the same pride in our city—your metropolis—for we realize that the most cordial, reciprocal relations should exist between Milwaukee and every other city, town and

hamlet in the State. We aim to foster everything that tends to the aggrandizement of the entire State and we want you to feel, other things being equal, that you are bound to patronize our jobbing and manufacturing interests. We want the ties of trade to be cemented stronger and stronger as each year goes by. I think you will bear testimony with me that Milwaukee has always stood ready to respond to every call from the State and to join in any move that tended for the betterment in trade and commerce, in education and in everything that goes to make a State great.

It had been our intention to have our municipal welcome emblazoned to you by night and day from our stately city hall, but this morning the national emblem was unfurled from the masthead of our ship of state at half mast in honorable recognition of the heroes of our fire department who lost their lives yesterday in the



LEON FINDEISEN, President.

performance of their duty. I know you will join with us in sympathy for the families of those brave men who lost their lives. The letters are ready and will be raised next year.

Mr. President, as secretary of the league I take great pleasure in extending to you and to the members of the Wisconsin Retail Hardware Dealers' Association at this time, in behalf of the Citizens' Business League, a most cordial and sincere invitation to meet with us again in 1904.

### Nearly 200 Members Present.

President Schlafer replied in a few well chosen words expressing regret for the city's loss, and thanking the people through the Citizens' League for the kind words of welcome to the Hardwaremen. At roll call nearly 200 members answered "Present." The annual address of the president was listened to with attention and great interest. After reviewing the business of the past year he referred to the great benefits which had been derived from organization, as shown not only in the State associations, but also in the national gathering. He paid a well-deserved tribute to Mr. Peck, secretary-treasurer of the association, and called attention to several interesting questions which are being agitated by the trade, and closed by recommending mutual insurance to Hardware dealers. The address was given in full in the last issue of *The Iron Age*.



### Committees.

The following committees were announced as having been agreed upon by the Executive Committee, which held an executive session prior to the opening of the convention:

RECEPTION COMMITTEE: F. C. Burr, Milwaukee; Wm. Yost, Wausau; Arthur Heins, Tigerton; John Sumner, Madison; Jas. Wilkie, Fond du Lac; H. C. Scofield, Sturgeon Bay; E. C. Williams, Waupaca; A. W. Puchner, Edgar.  
 COMMITTEE ON RESOLUTIONS: C. Kimball, Green Bay; L. M. Nash, Centralia; O. A. Labudde, Elkhardt Lake; Fred. Rassman, Beaver Dam.  
 QUESTION BOX COMMITTEE: Jas. Wilkie, Fond du Lac; E. Tietgen, Manitowoc; F. M. Finch, Whitewater.  
 TRANSPORTATION COMMITTEE: E. H. Ramm, New London.  
 AUDITING COMMITTEE: J. Kornelly, Milwaukee; H. L. McNamara, Janesville.  
 LEGISLATIVE COMMITTEE: L. M. Nash, Centralia; H. C. Scofield, Sturgeon Bay.  
 A. Schupinsky of Milwaukee was appointed sergeant-at-arms.

### Unseen Influence of Association Work.

The president invited H. A. Cole, who was formerly a Hardware dealer, ex-president of the Iowa Retail Hardware Dealers' Association and now in the manufacturing business at Chicago, to speak to the convention upon the "Unseen Influence of Association Work," from a manufacturer's standpoint. This Mr. Cole did in the following remarks:

I have looked through both ends of the retail Hardware dealers' horn. I confess that I do not know which is the big end, but there are phases of the work and the importance of it which come to one in the ranks of the manufacturer which are hard to appreciate from the other standpoint.

Your Mr. Peck outlined a subject for me just before dinner on the quiet influence or unseen influence of association work. I hardly know how I could illustrate my view of this subject in a more positive way than by likening it, to a limited extent at least, to the unseen influence which permeates the social fabric of the church. Every effort that your officers have made in the past seven years for the betterment of the business interests of the membership has passed along the line and been enjoyed to a greater or less extent by every retail Hardware dealer in the State, and likewise the efforts, the enlarged efforts, that are now being made by the National Association, through which all this past work of your State association will bear fruit, are passing down the line and accruing to the benefit of the Hardware business as a whole. There is a positive influence that flows out unseen and unappreciated by the Hardware dealers of the country, and which influences the jobbers in their attitude to the trade that is daily flowing through their offices, that daily influences manufacturers in outlining their policies for going after trade.

Now there are two opinions prevalent among the producing interests of the country, and it is a question to-day as to what will be the status of this branch of the distributing interests, what permanent place Hardware merchants are going to take in the trade of the United States. We see the trade of the catalogue houses almost doubling every year. I have not much fear but that the retail Hardware dealer will hold his own all right, and on this ground you can bank on this element in the buying public—you are up against it every day of your life—that they are not forehanded in their purchases. They wait until they have to get a thing and then they have to come to you for it. That is one of the great elements that will never be otherwise. It is a fact that if you are true to association ideals you will come out on top, but you have got to be true to those ideals and work together.

### Entertainment for the Delegates.

At this point a communication was read from the jobbers and manufacturers of Hardware of the city of Milwaukee, extending cordial greetings and inviting the members of the association to attend an entertainment at the Academy on Wednesday evening and at the Alhambra on Thursday evening, February 4 and 5, respectively. The communication was signed by the following concerns: John Pritzlaff Hardware Company,

Brand Stove Company, Geuder & Paeschke Mfg. Company, Lindsay Bros., Speigh Stove Repair Company, J. P. Lindemann & Sons, Wm. Frankfurth Hardware Company, Fuller-Warren Company, National Enameling & Stamping Company, Washington Cutlery Company, A. J. Lindemann & Hoverson Company, Boehm Stove Repair Company. Upon motion, a vote of thanks was tendered the manufacturers and jobbers for their thoughtfulness in providing for the entertainment of the delegates.

### Report of Secretary-Treasurer.

The report of the secretary-treasurer, C. A. Peck, which was given in our last issue, not only bristled with business points of gratification to the convention, but was overflowing with humor, which he interjected at intervals to the delight of the convention. In explaining the payment of dues by members, Mr. Peck told the convention that he had arbitrarily divided the convention into first, second and third class members, but that nearly all of them were third-class, which he explained by an illustration. In the early days of Wisconsin, when the stage coach was the approved method of traveling, passengers in making trips discovered that different prices were charged for first, second and third class passage, first-class being \$2, second-class \$1.50 and third-class \$1; but when it was discovered that all three classes occupied the same apartment and had apparently equal accommodations all, or nearly all, purchased third-class tickets. All went well until the stage reached the hilly country. At the bottom of each hill second-class passengers were invited to descend and walk up the hill, while the third-class passengers were requested not only to walk, but to push the coach up the hill. Mr. Peck wished, therefore, that all members of the convention would be third-class members and help push the association.

The financial statement was especially gratifying to the association, showing a balance of nearly \$1400 on hand. The report was greeted with applause and upon motion accepted and filed.

By request of the president members prepared a number of questions, which were brought out subsequently in the discussion by the members.

### Favors for the Members.

At this juncture W. F. Hyde of the Brand Stove Company of Milwaukee, having been given the privilege of the floor, announced to the members that the company had prepared a souvenir of the occasion and each member of the convention had been personally remembered, his name having been printed upon the cover of the souvenir. C. M. Zwick, representing the A. J. Lindemann & Hoverson Company, then addressed the delegates, inviting them all to visit the new plant of the company at Milwaukee, and announcing that arrangements had been made for any or all of the delegates to be the guests of the company on Friday morning to make an inspection of the works.

### Discussion on Profits.

The subject "On Profits" was then opened for discussion, a number of members volunteering, assisting Messrs. Nash, Findeisen and Rassman, who had been scheduled by the Executive Committee to speak to the convention upon the topic.

L. M. Nash of Centralia opened the discussion, the burden of his remarks being summed up in one word—"hustle." He introduced the subject by referring to a story relating to a gray haired old gentleman of the ecclesiastical profession who was anxious to get to the railroad depot as quickly as possible. Knowing that both routes were somewhat devious, he asked an urchin who happened in his way "What was the quickest way to get to the depot?" The boy replied, "By running, you old cuss." Drawing his conclusions from this story, he advised the members to be always on the alert, always running or always hustling to increase profits. He knew, however, that the way was always more or less devious, as was found by the man who tried to climb a very steep mountain by a crooked path, who many a time found that he was constantly meeting him-

self coming back in making the ascent. Mr. Nash referred especially to the necessity for making a great effort to obtain contracts for Builders' Hardware. It was not only necessary to seek business after building had begun, but to make an effort to be forehanded by an acquaintance with architects and learn, as do jobbers and manufacturers, even when buildings are contemplated, when plans are being drawn. He considered that the architects in discriminating against the dealers were almost as bad as the catalogue houses, and he therefore suggested that it would be well for the association to appoint a committee to treat with architects, that through concerted action they might obtain fair treatment and by thus securing more business increase the profits. He also called the attention of the association to the necessity of co-operation in the matter of insurance, and that it might be well for the Wisconsin Retail Hardware Association to imitate the example of the Minnesota Association. He favored the co-operation plan, as it reduced premiums and thereby increased profits.

#### Co-operative Insurance.

Secretary Peck informed the association that about 25 members of the Wisconsin Association had already taken policies through the Wisconsin Association. He added that application blanks could be obtained by addressing Mr. Mathews of the Minnesota Association. He himself had taken out a policy of \$1000, upon which he paid 1 per cent., but that subsequently he had received a dividend of 25 per cent., which had been applied upon the premium for the following year. For some unaccountable reason a sentiment existed among a few of the members of the Michigan Association against co-operative insurance, while in most other States co-operative insurance had been indorsed.

The subject of forming a Wisconsin insurance company was agitated, but many of the delegates seemed to think that it was more to the advantage of the association to accept policies in insurance associations already formed in neighboring States than to contend against the various legal difficulties in the way, it being pointed out that it would be necessary, before any other steps could be taken, to have at least \$200,000 of policies pledged.

It was pointed out by various delegates who were members of the various co-operative insurance companies that invariably their premium rate had been reduced as compared with the charges of the old line companies, and not in a few instances the formation of co-operative companies had induced the lowering of the board rate. Some of the members seemed to think that the limit of \$3000, as maintained by the Minnesota Association, was too low, as many of the dealers would like to carry twice that amount of insurance.

It was explained to the association that the laws of Ohio were even more stringent than the laws of either Wisconsin or Minnesota governing co-operative insurance companies, it being necessary to have at least \$500,000 pledged before license could be procured, and that much time would elapse and expense be incurred before the association was strong enough to comply with the legal requirements. In Ohio a \$10,000 cash reserve in bank is necessary to secure premiums and \$50,000 in securities to provide against loss. Under Minnesota laws the requirements are less stringent.

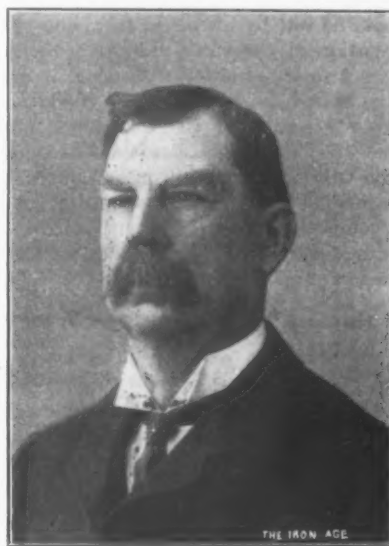
It seemed to be the sentiment of the convention that mutual insurance is desirable and pays. It was pointed out that the old line companies keep a great number of adjusters, to whom they pay large salaries, more or less, and hence their expenses are greater than the mutual companies, and further that the advances in premiums are often arbitrary and based upon the amount of business done during the preceding year. Although in one instance reported losses had been 35 per cent. less than the preceding year, premiums had been advanced.

It was decided that it was best not to be in a hurry, but that it would be well to have a committee appointed to investigate the requirements for incorporating a mutual company under the laws of Wisconsin. It was therefore moved that a committee of three be appointed

to investigate and report to the convention at the next annual meeting. The motion as amended appointed the president-elect, the outgoing president and the secretary-treasurer to form the committee. It was subsequently determined that the time of reporting be left to the discretion of the committee, and if the plan was found feasible to report at an early date and thus save considerable time.

#### Increasing Profits.

Vice-President Findeisen of Green Bay called attention to a previous remark that the man who was found to be the most active competitor was most always the most able business man, but he thought that while it is necessary to go after business actively, that it is possible to overdo the endeavor. While it is well to hustle, it is well to be prepared for emergencies and not push for work which could not be carried out when secured. In such cases he would have only himself to blame for not increasing his profits. He considered that a mistake is often made by selling goods too low. Also, that among the best ways of building up trade and increasing



H. L. McNAMARA, Vice-President.

profits was to treat all customers well, and especially to give good value; good quality in return for money.

Fred. Rassman of Beaver Dam considered that to increase sales and reduce expenses was the way to increase profits, and whatever would induce these conditions would be desirable. He considered that the joining of mutual insurance companies would tend to increase profits by reducing expenses.

Byron Walter of South Milwaukee contended that the profits in Hardware depend entirely upon the kind of goods sold. He ironically referred to the price of Nails and Sash Weights as "too great." He was greeted by a voice from the audience, "Add Fence Wire, brother." "Can goods be sold on less than 25 per cent. profit?" asked Mr. Walter. On some goods, yes; but increased competition lowers prices. The time was when Tinware could be sold at from 40 to 60 per cent. profit, but now it is necessary to go out of the regular Hardware line and deal in such as Bicycles, Paints, Lamps, Sewing Machines, &c. The time was when you could count on a customer year in and year out, but now you cannot count upon a customer to stand by you. If there are seven stores in town the customer will buy at all seven stores—wherever he can buy cheapest. If you try to sell an IX or an IXX Tin Boiler, how can you convince a woman who has seen an IC Tin Boiler at a lower price—hold up your hands and convince that woman that yours is the better? The question of profits it seems depends a great deal upon the man selling and upon the "duffer" you have before you. There can be no rule to govern profits.



### Quality the Watchword.

A number of other remarks were made, all going to show that the sentiment of the association was that it is best to make a fight against cheap goods on the basis of quality. Sell the best if possible, but keep the cheaper goods to show the difference. Hardware dealers as a rule are compelled through force of necessity to carry a cheap line of goods, but only to expose the fallacy that cheap goods are economical. Quality forms the best foundation upon which to make the fight. The best is the cheapest. Many of the delegates gave instances wherein they had acted on these principles and always successfully; but it is best to be satisfied with legitimate profit and not endeavor to sell at fancy prices.

### Local Association's Help.

Several of the delegates referred to the advantages derived from local organization in the way of increasing profits, as the successful organization of competitive firms nearly always brings about the elimination of destructive competition. This plan of local organization was considered especially feasible in smaller places where the members may get together much more readily than in large cities, the introduction of social features assisting to this end.

It was pointed out by members from the larger cities that the situation of the store has much to do with organization, and in large cities it is often impracticable, but that each man must be master of the situation, and it is largely a question of individualism. Most Hardwaremen are driven into a cheap class of goods by the efforts of the catalogue or mail order houses, but these cheap goods should only be carried to detract from the destructive competition of department stores. As a rule the legitimate dealer gains most from selling the best goods at reasonable prices.

### Fight the Devil With his Own Weapons.

If the Hardware dealer finds that a grocer is selling Tinware and Hardware at low prices merely as a drawing card, he is perfectly justified in putting in groceries, even a carload of salt or sugar, and selling at low prices, even at cost if necessary, to show grocers that such an invasion of the Hardwareman's territory is unprofitable. Meet the grocer on his own ground and fight. Carry a good line of goods and establish a reputation on quality, was the injunction most often repeated.

It was pointed out by others that the best way to maintain profits or to increase them is to insure customers that they are getting full value for their money. Or, as one dealer naively expressed it, "It is necessary to mix brains with your goods." A good salesman will sell the best goods. The increase in profits depends largely upon the intelligence of the salesman, his acquaintance with the goods, the qualities, the peculiarities of manufacture, &c.

Another important point seemed to be that it is necessary to be careful not to overpurchase. The overloading of the shelves will eventually lead to cutting prices and reduce profits.

Mr. Conkey of Madison dwelt upon the advantages to be derived from local association, explaining to the convention the success which organization had brought to the dealers in his district. Through co-operation they had been able to obtain consideration from architects. He explained in detail the working of the association through which they were enabled to maintain a treasury in which there is now a balance of \$600.

It was pointed out by others that it is necessary to buy right if profits are to be maintained or increased; that it is not all the selling but even to a greater extent the way that purchases are made that increases profits. Do not hurry; take time to buy right.

Again and again the advantages of local associations were brought out by different members as chance remarks suggested incidents in various localities.

### Largest Treasury Balance.

Secretary Corey of the National Association took occasion at this time to congratulate the Wisconsin association in the possession of the largest balance of any

State association, credit for which he thought was due largely to Secretary Peck. He had ideas of his own and courage to put them in force.

### Remittances by Draft.

The question of the advisability of remittances by check was brought up by some remarks in the treasurer's report, through which it was shown that by an arrangement with the bank 15 cents was paid on each draft which was collected and 10 cents for all drafts returned unpaid.

### A Plea for Quality.

Secretary Peck advocated strongly the advisability of carrying and selling the best quality of goods. He found that his success was largely due to establishing a reputation for quality, it being his habit to put a label upon which was printed "Peck's Own" upon all goods which he considered worthy.

After gathering the papers for the Question Box the convention adjourned until Thursday morning.

### For a Banquet in 1904.

Upon a reassembling of the convention at 10 a.m. on Thursday there was a strong sentiment favoring a banquet for the next annual convention. Many delegates expressed themselves as tired of receiving favors without giving something in return, and that it would be highly desirable, after devoting two days to the business of the convention, to set aside one day for social features, the delegates to be accompanied by their wives and other friends during the time devoted to social functions; it being also suggested that a programme be arranged for interesting addresses by Congressmen and others, it being thought that much good might accrue to the association from the social features. On the other hand, it was declared that the dealers should not feel under obligations to the jobbers and manufacturers for the favors shown, as the best way to appreciate such efforts was in the purchasing of goods from the companies who had been the hosts of the delegates heretofore.

A motion was made that a banquet be arranged for the next annual meeting. Another delegate called attention to the fact that fully \$1000 would be necessary to defray such extraordinary expense, and it was suggested that a committee be appointed first to ascertain the cost and feasibility of the plan suggested. It was further objected that new members might be deterred from joining the association if such social features were indulged in. On the other hand, the opinion was expressed that it was just such innovations that might bring additional members into the association. John Hughes of Fond du Lac said expense was nothing -- that is, it would be little considered if it were thought necessary or expedient to have the banquet -- and that it would be well to take the matter under advisement.

Another delegate gave expression to the thought that it was more necessary to have a reputation for the largest balance in the treasury than to give the banquet. Secretary Corey of the National Association explained to the delegates the custom of the Indiana Association, which always gives a smoker, but limits the expense to \$100. He considered the social features desirable, and that traveling men and jobbers as well attended these functions.

### Election of Officers.

The unanimous choice of the convention fell upon L. Findelsen of Green Bay for president and H. L. McNamara of Janesville for vice-president. C. A. Peck was unanimously re-elected to the position of secretary-treasurer. H. C. Scofield of Sturgeon Bay and R. C. Murdock of Beloit were elected members of the Executive Committee for the two-year term. After the election President Schlafer thanked the association for their co-operation during the past year, and with a few appropriate remarks introduced the new president, Mr. Findelsen of Green Bay, who, upon accepting the gavel, thanked the association for the honor conferred upon him, and while he thought the association would regret the choice they had made, he would advance the inter-

est of the association to the best of his ability. Mr. Peck, who had been elected secretary-treasurer for the seventh time, thanked the association for their renewed confidence, and promised to do the best in the discharge of his onerous duties to keep the society in its present path of prosperity.

#### Address of Secretary Corey.

M. L. Corey, secretary of the National Retail Hardware Dealers' Association, was invited by the president to address the convention on some topics of interest to all Hardwaremen. Mr. Corey's address in part is as follows:

I don't think that I will undertake to confine myself to the programme that I had mapped out. I have learned something by being present at this association. I don't think that I ever attended an association meeting without obtaining some benefit. I think every one of you will learn something and will be benefited by attending this meeting.

I want to congratulate you upon your most excellent meeting, and upon the selections that you have made of officers for the coming year, and I predict for you during the next year one of the most successful seasons that you have ever had.

We all learn by experience, and certainly Wisconsin has profited. Now, right in line with what was said, this morning, I picked up a Chicago paper last night, my attention being attracted to an article about the little old fashioned stores, comparing them with the gigantic department and modern improved stores, and stating what a great improvement they were; how the people can buy for \$1 there what would cost them \$2 in your little old fashioned stores; stating that it was a great manual for a schooling; that it was a great place for educating your boys and girls.

That is the kind of a school that a great Chicago daily is advocating for your children. Not over 5 per cent., I will say, of the men and women that go into those institutions can ever hope to obtain a position whereby they can support a family. Still, that is the school that they would like to have you put your children in, and have everybody patronize and build up to the exclusion of the little old fashioned stores. They only see one side. I simply speak of this matter to let you know that the daily press of our country, and another class also, the cheap agricultural journals that are sent out over the country to farmers, are not looking to your interests, they are not looking to the interests of society, but they are looking for their own pocket books.

I may be somewhat of a crank upon this question of catalogue houses, but it is simply because I have investigated the thing so much, I have had it brought to my attention so often. I have had letters from members in this State and that State. I have had the thing brought before me day after day for the last two years until it almost fills me with alarm for the future. These houses are trying to prejudice the great army of farmers against you, and that is one of the greatest dangers in the future for us. It is a curious fact that many times the words of a stranger carry more with them than some one whom they know to be responsible.

Mr. Corey then read an interesting address on the general affairs of State associations, the insurance question and the work of the National Retail Hardware Dealers' Association.

At the close of his address a vote of thanks was tendered to Mr. Corey by the association.

#### Elkins Bill.

Secretary Peck informed the convention that the Elkins bill, designed to facilitate the work of the Interstate Commerce Commission, that it might act promptly in cases of indiscriminate by railroads in making freight rates, which bill the association indorsed last year and recommended for passage, had passed the House and is now in the Senate. It was thought desirable that the association assist in paying the expenses of those who had worked for the measure, it being greatly to the interest of the Hardware dealers. Upon motion

the association appropriated \$25 and the treasurer was authorized to make payment. A draft of the resolutions adopted by the association last year was read to the convention, and the secretary also notified the delegates that he had received a long letter relative to the bill, which set forth in detail the work which had been done.

#### Delegates to National Convention.

Upon motion the president and secretary were elected delegates to represent the Wisconsin Retail Hardware Association at the national convention, to be held on March 17, 18 and 19 at Chicago. Secretary Corey of the National Association explained to the delegates that while each State was entitled to two delegates and two votes at the national convention, it was desirable that as many members as possible attend the convention. Although they would have no vote, their suggestions as to work to be accomplished would be gladly received, or



C. A. PECK, Secretary-Treasurer.

if any had any grievances these would be acted upon as though they were fully qualified as delegates.

#### Builders' Hardware.

A strong sentiment was discovered to exist among the delegates favoring some action toward the fuller recognition of the dealer in the selling of Builders' Hardware. The opinion seems firmly rooted that both manufacturers and jobbers have been benefited at the expense of retailers, and that such discrimination may cease association action was favored. Many illustrations of discrimination and low prices were brought forward. It was claimed that the dealer, if he did not secure the contract for the Hardware direct, should at least be protected and receive a percentage upon the goods sold. It was pointed out that it is almost impossible for the dealer to carry a large enough line of samples to compete with manufacturers' agents, but that the dealer should be fully protected upon the trade within his territory.

#### Pricing Stocks.

H. C. Scofield of Sturgeon Bay read the following paper, which was listened to with interest:

On being given free rein in the selection of a subject for the paper that I was to prepare, I quite naturally took up one of my hobbies. My favorite one is pricing stock. You are all familiar with the old maxim of "Goods well bought are half sold."

Now I have contended that it is just as necessary (in order to make a proper showing at the end of the year) that your merchandise be plainly and systematically priced or listed as it is to have it well bought. I



claim that by so doing you are assisted in buying as well as selling to an advantage. A ready reference to your cost is often the means of getting you a better price in buying, for by comparison of your last costs with a salesman's quotations you know exactly what you are doing and he is almost certain to strive to make a favorable showing. So much for buying.

Now in selling it certainly inspires confidence in your customer when you can promptly and without any hesitation furnish him with a price and an exact description of any article in your stock. It is just as certain to create a feeling of distrust when you are at a loss to know what your cost and selling prices are and are obliged to look up some old invoice or hunt for some nearly obliterated character on the article or on the nearest wall or shelf. The customer is very apt to question in his own mind whether he got the right price or not. In many establishments some one clerk, who by his attention to details and faculty for remembering, is generally looked to for information as to prices, stock, &c. You have no doubt heard one salesman call to another, "Say, John, what do those Crowbars sell for?" John is no doubt busy with another customer, and if he does not have the price in mind he leaves his customer to help find the price of Crowbars. Possibly the price is not found and is guessed at, or some old price at which the goods were sold before the advance is quoted, and a profit is lost where one ought to have been made. This is only an instance of what could happen or possibly is an actual occurrence a number of times a day.

In the matter of pricing up an inventory, a system of pricing is an absolute necessity if you would come anywhere near the value of your stock of merchandise. After you have perfected such a system it is very little labor to keep it up. Nothing that you can do will keep you better posted than comparing and changing the prices in your price books from your invoices. This is

#### OUR METHOD.

We had made to order a set of five price books; we started out at first with but one book, but being rather bulky and being handled so much, it did not wear very well, and again time was lost by one clerk waiting for another to get through with it. We had the books made 7 x 9 inches, of the best quality of paper and bound in stiff leather covers, flat opening. We would recommend that the loose leaf style of book be used, so that a leaf torn or worn can be replaced at any time. The books are indexed through with leather index tabs; these tabs project at the edge of the book, so that it is not necessary to touch the pages if the fingers are soiled. The pages are ruled with columns for list, discount, net, job and retail prices. The sizes and descriptions of the articles we write in ink, the list and prices are written with a fine, hard pencil that they may be readily erased for changing. We select illustrations of the articles from our catalogues; you can generally find anything you want in the catalogue house's lists; these are better on account of being smaller and the paper thinner; we make use of the pictures for the reason that when several articles of the same name are listed—for instance, Wedges—our most inexperienced help could tell from the picture, if he could not from the description, which pattern sold at 5 and which at 10 cents per pound. Getting up these lists is very interesting work for quiet days or evenings.

#### OUR LISTS ARE CLASSIFIED

as a General List, Fittings and Plumbing, Paint, Pump and Stove Department. In the General list we keep all lines that do not properly belong to the other lines; in the Pump list we devote one page to each style of Pump and on the same page we list such repairs as we keep in stock for that particular Pump, such as Handles, Caps, &c. The Stove list is made up with a stub leaf between each page; to this stub we paste the page taken from the manufacturer's list, showing the illustration and description of the stove; on the ruled page we insert prices, costs, &c. From this page linen tags, printed with spaces for cost, selling price, oven and fire box sizes, are made out and attached to the Stoves. The Stove book is really more for the buyer's benefit.

Goods that we keep in shelf boxes are priced on slips

of cardboard tacked or pasted to the side of the box or bin; these slips are ruled off in the same spaces as the pages of the lists, and are corrected or changed when new goods are added or prices changed.

Guns are priced by attaching by strong cords a linen tag printed with spaces for the caliber, weight and length of barrel, cost and selling price.

These books we keep in an accessible place near the telephone so that there is no delay in quoting a price when taking an order.

#### A BULLETIN SLATE.

We keep in a central place where the salesmen can all see it a common school slate. This we have divided into two spaces. The upper part we have headed "Advanced" and the lower space "Declined." When a change in the price on staple goods, such as Nails, Wire, &c. (these prices being generally memorized), is made the name of the article is written under the proper heading. This slate is in fact a bulletin board which gives immediate notice of the change. No prices are placed thereon, simply a notice of change.

In making any change in the price books, especially the more staple lines, we also enter the date of the



H. C. SCOFIELD.

change. This is convenient in case of a dispute of price afterward.

#### WE KEEP A FILE OF ALL QUOTATIONS

that we receive and all catalogues and lists received from the manufacturers are kept accessible, so that we can in a moment look for anything that is called for that we do not happen to have in stock. Our customers know this and it is often the means of bringing us orders for articles that yield us a fair profit. In pricing your lists and stock there is one very important factor and it must not be lost sight of, and that is your competitor. His views as to what goods ought to sell at are not always in accord with yours, and it sometimes happens that there is cutting of each other's prices, the question of profits being lost sight of altogether.

#### DEALING WITH COMPETITORS.

As a remedy we would urge that you use a little tact and diplomacy and get better acquainted with him; he is not such a bad fellow as you imagine him to be. Your interests are almost identical with his; you both are entitled to fair profits on your investments. With this end in view I would urge that if your competitor is here attending this meeting (if he is up to date and a formidable rival, he is no doubt here), that you get in touch with him; agree at least on the price of a few of the staple goods that you have been selling at little or no profit as a result of your rivalry for trade; stick to these prices; do not take advantage of the situation to

get too large a profit, but a fair to all return; it will be more liable to endure and will be more satisfactory to all concerned.

#### Kindred Lines.

A paper entitled "Kindred Lines" was read by Ralph M. Burtis of Oshkosh. This paper was given in full in *The Iron Age* of last week.

#### Remittances.

Ex-President Schlafer brought up the matter of payment of bills by checks. He expressed the belief that the dealer would find great benefit accruing to himself by the payment of his bills through the medium of a draft rather than by check, upon which his creditors were obliged to pay 10, 15 and even 25 cents for collection. His custom was to lump his bills once a month, purchase a draft from the bank, the cost for which was nominal, and save the jobbers and manufacturers from whom he purchased any expense. He believed that such methods were supported by good business methods, and were thoroughly appreciated by jobbers and manufacturers. He further called the attention to the dealers of the drain upon members through what he called "fake advertising," such as catalogues or programmes issued for various church fairs, railroads, hotels, &c.

#### National Association Dues.

Secretary-Treasurer Peck called the attention of the association to the payment which was due by the local association to the national association at the rate of \$1 per member. He further stated that there was some difference in the basis upon which different States made payment to the national body; but that an effort would be made at the next meeting to have the matter adjusted or rather equalized. It was further noted that the State Association would this year realize \$3000 from the advertisements in the programme. Because of the most effective work done by the National Association, which benefited each State Association alike and all members of such associations, he considered that the \$1 per member was a good investment. The work which the national body had accomplished in inducing manufacturers and jobbers to discontinue supplying department stores and catalogue houses was in itself of almost incalculable benefit to the members. The association then adjourned until 2 p.m.

#### Resolutions.

Upon the reassembling of the convention at 2.30 Thursday afternoon the reports of the various committees were taken up. The report of the Resolution Committee was approved, and upon motion placed on file. The resolutions were as follows:

*Resolved*, That the members of the association extend a vote of thanks to the proprietor of the Republican House for the courtesies shown in extending the use of the hall free of charge for our meetings.

*Resolved*, That the members of the association extend a vote of thanks to the members of the trade press for courtesies extended in publishing the reports of our meeting.

*Resolved*, That the members of the association extend their heartfelt thanks to the manufacturers and jobbers of the city for the manner in which they so cordially received and entertained us while visiting their city.

*Resolved*, That the members of the association extend our thanks to the Citizens' League of Milwaukee for the welcome extended and intrusting us with the keys of the city.

*Resolved*, That the association extend their thanks to M. L. Corey of the National Retail Hardware Association for the many valuable suggestions and addresses by which no doubt we will profit greatly.

*Resolved*, That the association extends thanks to the A. J. Lindemann & Hoverson Company for the kind invitation extended to the members of this association to partake of their hospitality and to visit their works.

*Whereas*, The Supreme Ruler of the universe has seen fit to take from our midst during the last year Henry Marriott, Wm. Marriott and Chas. Noll, and

*Whereas*, They have ever been held in memory with our esteemed respect, be it

*Resolved*, That the association herewith tender our sympathy to the bereaved families and that this resolution be spread on the minutes.

#### Local Associations.

Emil Teitgen of Manitowoc addressed the convention on the question of local associations, as follows:

I have not prepared an elaborate paper. Section 2, Article 1, of our constitution reads: "The object of this association shall be to promote the interests of the retail Hardware trade and create confidence among the members."

The association has done a great deal in protecting the Hardware business, even beyond the limits of this State, but it has done very little in creating confidence, particularly in any neighborhood where the members come in competition with one another. Among us there seems to be as much competition now as ever, although these are days of combinations—combinations among Hardware jobbers, combinations among Hardware manufacturers, combinations among the Stove manufacturers, who seem to find it convenient every little while to raise prices upon us so as to enable some of them to make lower prices to the catalogue houses.

The speaker said his attention had been called the previous Monday evening to the fact that a prominent Chicago house had offered to the consumer a Stove without a brand at a much lower price than a similar Stove under a well known brand was being offered.

Mr. Teitgen called attention to the fact that many railroad agents were now distributing catalogues of the catalogue houses and practically acting as their agents in many towns.

The speaker then gave a history of the local Hardware association that had been formed in his town of Manitowoc. He said they had a very successful organization, and it had resulted in very amicable relations between the dealers in his town. If we had local associations in every city, he said, it would be but a very short time before we all became good friends; that we would gain the confidence of one another and accomplish more in every way than on any other plan. He was in favor of the association employing an organizer and sending him out and have him visit every city, and if this was done he was satisfied that in a year from this time the State association would be much stronger than it is now.

In closing Mr. Teitgen said he would like to have the association take up the matter of the delivery of catalogues by railroad agents, and also the matter of the sale of the particular Stove he referred to, as well as to the subject of local organizations.

#### Warranting Goods.

O. A. LaBudde of Elkhart Lake then addressed the association upon the subject of Warranting Goods. He announced that his experience had taught him that in many cases guarantees conflicted and in cases where goods were sold on credit much trouble was experienced; while, on the other hand, goods sold for cash and guaranteed gave little annoyance. In not a few instances where goods are sold on credit the Axe is often returned as "too soft," or the Scythe "too hard and had broken out." He dwelt at length upon the guarantee system as applied to the selling of Stoves. He advised that it was not well for the salesman to lay very much weight upon a guarantee as it was like a blanket mortgage covering everything. It meant a guarantee of cooks, a guarantee of flues, and such other collateral subjects and conditions. He had found in practice much better results from recommending something to one who had purchased and used the Stove being sold. While in many cases the manufacturers stand back of the guarantee, the guarantee is often misused and upon that basis customers often return the goods purchased. He thought that it would be well to discontinue the practice of guaranteeing as a system, depending entirely upon the manufacturers. In cases of selling Cutlery and Scythes it is necessary to stand pat. In cases where the customer insisted upon a guarantee it was often desirable to ask a price which would cover contingencies, or high enough to discourage the purchase carrying the guarantee.

President Findelsen remarked upon the conclusion of the paper that not in a few instances it was necessary



to exchange goods whether guaranteed or not, and he presumed that all had experience of this kind.

#### Profits of Rising vs. Declining Market.

Fred. R. Peck of Berlin then read an admirable paper on "Profits of Rising vs. Declining Market." The paper was exceptionally interesting and fully appreciated by the association. Mr. Peck touched neatly upon the foibles of manufacturers and jobbers from the standpoint of the dealer, which won for him the applause of the members. The paper was given in full in the last issue of *The Iron Age*.

#### Time Sales of Stoves.

At this point the Question Box yielded a fertile subject for discussion. The question was in selling Stoves on time or the installment plan—do dealers charge more than where a cash sale is made? President Findeisen, speaking for his own firm, said that they made no difference in price, whether the Stoves were sold for cash or on time. He considered that the lease was in many respects similar to a chattel mortgage, and that his own experience had been very gratifying, there being very few, if any, losses. In some cases he had recorded the lease, which was necessary to give the contract a legal status, but only in exceptional instances was such a course necessary. He also announced that to make the contract binding it is necessary to give a copy of the lease to the customer. Most of the other delegates, however, who spoke upon the subject affirmed that they obtained from 5 to 10 per cent. additional in selling on time over the cash price. President Findeisen announced that he had met with no loss in selling on the installment plan in 13 years.

Ex-President Schlafer announced that he had used a similar form of lease for years and that he had been in the habit of reading the lease to the customer, but had not given him a copy. He was not aware that such a course was necessary. He announced, in reply to a question, that he had blank forms, which required, but little labor to fill, two witnesses being required to every lease. The delegates that spoke to the question agreed that it was customary to require a certain cash payment down, one-third if possible.

One member wished to know if the dealer would have recourse in recovering if a customer who had purchased a Stove on the installment plan removed from the State. The reply was that the lease contained a clause that the goods could not be removed without the consent of the seller.

The opinion was expressed that if the lease referred to was in the nature of a chattel mortgage it would be necessary to have the wife of the purchaser sign it. The reply was made that if a part of the purchase price had been paid when the purchase was made that the wife's signature was not necessary.

In reply to what was the limitation of time customary in such sales the reply was made that two years was generally given, although a longer time under special circumstances was sometimes granted.

Several of the delegates considered that it was an excellent plan to stimulate cash purchases, by explaining that the customer would purchase at a lower price than if he obtained his goods on time.

In many cases it was affirmed that department stores sell upon the payment of \$2.50 cash and \$2 per month, Stoves which retail at \$35.

One of the Milwaukee delegates called attention to the fact that some department stores in Milwaukee had made it a practice for some time to sell Stoves—costing from \$5 to \$50—at the same price, whether for cash or on time, but after some experience and persuasion they were induced to change their methods so as to stimulate cash purchases.

Some further questioning brought out the sentiment of many that gas companies in selling Stoves direct to consumers were discriminating against the retail Hardware dealer, as they sold to consumers at the same price as to dealers. This was followed by the announcement that the gas company at Milwaukee now furnishes samples to dealers and makes a difference in the price given

to consumers and those to dealers, thus protecting the Hardwaremen.

#### The Lien Law.

Mr. Murdock called the attention of the convention to efforts which had been made in the past to repeal the lien laws of the State. He considered that if such an attempt were successful it would be a blow to the interest of the Hardwaremen, and he appealed to the delegates if such an appeal were again attempted to make a strong effort to defeat it.

#### Eligibility to Membership.

The question was asked, "Is a dealer who carries groceries, feed and Hardware stock eligible to membership in the association?" The replies made seemed to indicate that if such dealer were located in a town of less than 2500 inhabitants he was eligible, as in many small places it was absolutely necessary to carry an assorted stock of various goods to make a living; but if the Hardware were carried merely as a side line such dealer would not be eligible to membership in the association.

#### Protection of the Dealer.

Another delegate called the attention of the convention to stores which were using Hardware merely as a club, and that it would be well to ask the aid of manufacturers and jobbers of Hardware to lend their assistance to protect the small dealers.

#### Must Increase Lines.

The question was asked that in small towns where Hardware stock was not sufficiently remunerative what side lines could be added that would be profitable. This question had been replied to in the paper of Mr. Burtis on "Kindred Lines," published last week. It was further repeated, however, in reply to the question, that Stoves, Furniture, anything that would run on snow and ice, Farming Tools, Harness, Tin Shop, Harness Shop, Wind Mills, Paints, Varnishes, Rope, &c., were suitable side lines. In some cases the Hardwaremen had been compelled to adopt this method of aiding business, as in many instances farmers would go elsewhere to purchase goods not carried in their own towns, and would often be induced to buy Hardware and other specialties.

#### County Organizations.

In reply to questions asked as to the progress making in the formation of local associations, Secretary Peck announced that of the 64 counties of the State 50 had been provided for, leaving 14 unprovided, and he called for volunteers wanting to know if among the members present there were those who would accept the commission of forming local organizations. To this a delegate replied that it would be detrimental to the interest of the Hardwareman should it be known that he was making an endeavor to bring about such an organization, as it would leave him open to the charge of forming a trust. The sentiment seemed to favor that organizations be accomplished through some one other than residents of the county.

Upon motion, the association adjourned *sine die*.

#### Members Present.

The following is a list of the members that answered to the roll call:

Ashley, L. P., Pardeeville.	Dobl & Busse, Milwaukee.
Arndt, John, Elkhart Lake.	Drueger Hardware Co., Seymour.
Andersen & Liebe, Staughton.	Easer & Schmidt, Hartford.
Burr, F. C., & Sons, Milwaukee.	Findelsen Bros., Green Bay.
Barlow & Seelig, Ripon.	Finch, F. M. & M. M., White-water.
Bullwinkle, C. F., Jefferson.	Fehland, H. R. & Co., Merrill.
Binkelman, W. E., Marion.	Frisbee, H. E., & Son, Pine River.
Buelow, Geo. W., Waupun.	Fessenfeldt & Barber, Black Earth.
Burtis, R. Co., Oshkosh.	Foss, Armstrong & Johns, Spring Valley.
Beyer & Dexter, Cambria.	Field & Walcott, Sharon.
Braun, Aug., Milwaukee.	Fuge, A. C., West Bend.
Centralia Hardware Co., Centralia.	Gross & Jacobs, Stevens Point.
Duecker & Co., J. M., Kiel.	Gaffron, Trowbridge & Kohl Co., Plymouth.
Daniels & Co., E. H., Milwaukee.	Grosjean, Wm. G., Milwaukee.
Dana, Geo. P., Fond du Lac.	Gill, Jno., & Son, New London.
Dunstan, J. A., Hollandale.	Haweld Bros., Blair.
Droekamp Hardware Co., J., Milwaukee.	Hay Hardware Co., Oshkosh.
Day-Lindsay Hardware Co., Omro.	
Deniger, J. W., Randolph.	

Hughes, John, Fond du Lac.  
 Hayden, J. D., Sun Prairie.  
 Hay Hardware Co., J. S.,  
 Sturgeon Bay.  
 Hessel, Jno., Antigo.  
 Haas & Hohman, South Kau-  
 kauna.  
 Hamilton Bros., Westfield.  
 Hahn Est., J. D., Edgerton.  
 Hans, Fred., Fox Lake.  
 Janich, Chas., Waterloo.  
 Kornely, J., Milwaukee.  
 Krueger, W., & Co., Neenah.  
 Kimball, A., Green Bay.  
 Krocke Bros., Madison.  
 Krogman, H. M., Milwaukee.  
 Kirscher Bros., Manitowoc.  
 Kahn, A., Jr., Sauk City.  
 Kraus & Grau, Port Washing-  
 ton.  
 Kinder, Chas., Viola.  
 Kalser, J., & Son, Muscoda.  
 Leach, F., Hardware Co., Osh-  
 kosh.  
 Lehman Bros., C. W., Cedar-  
 burg.  
 Lindsay, Wm., Milwaukee.  
 Lee & English, Baraboo.  
 Loescher, G. A., Menasha.  
 Linn & Hood, Spring Green.  
 Lacy & Clancy, East Troy.  
 Labudde, O. A., Fond du Lac.  
 Lange, C. F., Fond du Lac.  
 McGraw, F. E., Peshtigo.  
 Montgomery Hardware Co.,  
 Wausau.  
 McNamara, H. L., Janesville.  
 Matthaeus, F. W., New Hol-  
 stein.  
 Marven, H. H., Oregon.  
 McDowell, S. E., Pewaukee.  
 Mueller, G. T., Columbus.  
 Martin & Kuebler, Viroqua.  
 Moore, Robt., Reesville.  
 Meyer, Fred W., Manitowoc.  
 Miller Hardware & Lumber  
 Co., Alma Center.  
 Machlett, Henry, Curtiss.  
 Murdock, Dunwiddie & Co.,  
 Beloit.  
 Morrison, H. W., Oakfield.  
 Manz, H., Springfield.  
 Noll, Andrew, Clinton.  
 Newbauer, A., Winneconne.  
 O'Brien, W. W., Hartland.  
 Oettker Bros., Platteville.  
 Peck, C. A., Hardware Co.,  
 Berlin.  
 Prenzlow, H. F., Johnson  
 Creek.  
 Pieper, C. F., Columbus.  
 Paulus, Peter, Hardware Co.,  
 Milwaukee.  
 Pfingradt Bros., Milwaukee.

#### Other Visitors.

Among others who registered during the convention were the following:

Geo. T. Adams, Estate of P. D. Beckwith, Dowagiac, Mich.  
 H. L. Mosher, Estate of P. D. Beckwith, Dowagiac, Mich.  
 Albert Topping, Columbian Enameling & Stamping Company,  
 Terre Haute, Ind.  
 W. H. Pipp, Columbian Enameling & Stamping Company, Terre  
 Haute, Ind.  
 H. L. Pipp, Columbian Enameling & Stamping Company, Terre  
 Haute, Ind.  
 Annis B. Porter, E. Z. Mfg. Company, Galesburg, Ill.  
 F. E. Sladden, Allith Mfg. Company, Chicago.  
 Day Gordon, Morley Bros., Saginaw, Mich.  
 S. H. Corbett, Morley Bros., Saginaw, Mich.  
 Jos. Mertle, Morley Bros., Saginaw, Mich.  
 W. J. Norris, Wheeling Corrugating Company, Chicago.  
 W. H. Hankin, Simonds Mfg. Company, Chicago.  
 Harry C. Frantz, J. L. Perkins Company, Chicago.  
 J. W. Roraback, J. A. Harps Mfg. Company, Greenfield, Ohio.  
 H. H. Roberts, *The Iron Age*, Chicago.  
 W. A. Douglass, *The Iron Age*, Chicago.  
 W. T. Partridge, *The Iron Age*, Chicago.  
 W. F. Hyde, Brand Stove Company, Milwaukee, Wis.  
 W. B. Lyman, Brand Stove Company, Milwaukee, Wis.  
 J. W. Roraback, Columbus Stove Company, Milwaukee, Wis.  
 M. L. Corey, National Retail Hardware Association, Argos, Ind.  
 G. C. Mueller, L. J. Mueller Furnace Company, Milwaukee, Wis.  
 N. B. Garnsey, L. J. Mueller Furnace Company, Milwaukee, Wis.  
 L. J. Mueller, Jr., L. J. Mueller Furnace Company, Milwaukee,  
 Wis.  
 George B. Carr, L. J. Mueller Furnace Company, Milwaukee,  
 Wis.  
 E. F. Schlecht, L. J. Mueller Furnace Company, Milwaukee, Wis.  
 C. M. Zwick, A. J. Lindemann & Hoverson Company, Milwaukee,  
 Wis.  
 Charles E. Bock, Milwaukee Corrugating Company, Milwaukee,  
 Wis.  
 Louis Kuehn, Milwaukee Corrugating Company, Milwaukee, Wis.  
 Daniel Stern, *The American Artisan*, Chicago.  
 Sidney P. Johnston, *The American Artisan*, Chicago.  
 Le Roy Simpson, Wilcox Mfg. Company, Aurora, Ill.  
 A. J. Upham, De Kalb Fence Company, Chicago.  
 H. D. Final, Marshall-Wells Hardware Company, Duluth, Minn.  
 C. A. Dunning, Marshall-Wells Hardware Company, Duluth,  
 Minn.  
 Walter E. Voigt, manufacturers' agent, Chicago.  
 John C. Kroner, La Crosse Steel Roofing & Corrugating Com-  
 pany, La Crosse, Wis.  
 Louis A. Denoyer, J. L. Perkins Company, Chicago.  
 O. C. Harrison, Home Pride Range Company, Marion, Ind.  
 W. C. Nelson, American Screw Company, Chicago.  
 M. Ledwidge, Follansbee Bros., Chicago.  
 H. A. Cole, Cole Mfg. Company, Chicago.  
 H. O. Spencer, the Richards Mfg. Company, Aurora, Ill.  
 Chas. F. Smale, Jr., Heath & Milligan Company, Chicago.  
 H. M. Gay, Wells & Nelegar Company, Chicago.  
 Geo. Geuder, Geuder & Paeschke Mfg. Company, Milwaukee, Wis.  
 Frank Gould, Henry Diston & Sons, Chicago.  
 Joseph W. Hall, Jewett & Co., Buffalo, N. Y.

J. C. Hood, the Fuller-Warren Company, Milwaukee, Wis.  
 E. E. Dunning, R. J. Schwab & Sons Company, Milwaukee, Wis.  
 J. P. Solon, John McCoy & Sons, Chicago.  
 J. L. Potter, the Fuller-Warren Company, Milwaukee, Wis.  
 W. J. Potter, H. W. Johns-Manville Company, Milwaukee, Wis.  
 Jacob Retterer, Jacob Retterer, Chicago.  
 H. G. Reynolds, H. M. Reynolds Roofing Company, Grand Rapids,  
 Mich.  
 C. A. Robertson, Allerton, Clarke & Co., Chicago.  
 Geo. W. Rue, Brand Stove Company, Milwaukee, Wis.  
 T. A. Musgrove, Geuder & Paeschke Mfg. Company, Milwaukee,  
 Wis.  
 G. P. Plischke, Hibbard, Spencer, Bartlett Company, Chicago.  
 W. H. Pier, Favorite Stove & Range Company, Piqua, Ohio.  
 D. A. Lewis, Rochester Stamping Company and Robeson Cut-  
 lery Company, Rochester, N. Y.  
 Wm. Lindsay, Lindsay Bros., Milwaukee, Wis.  
 Chas. Lindemann, J. P. Lindemann & Son, Milwaukee, Wis.  
 R. H. McMahon, C. Sidney Shepard & Co., Chicago.  
 J. M. McHenry, Brand Stove Company, Milwaukee, Wis.  
 Peter Mason, Kehl-Buckle Company, Reedsville, Wis.  
 E. B. Martin, George M. Clark & Co., Chicago.  
 A. T. Meyer, Brand Stove Company, Milwaukee, Wis.  
 Louis E. Swane, Detroit Stove Works, Chicago.  
 Charles C. Sostheim, Richardson & Boynton Company, Chicago.  
 E. H. Streissguth, Wm. Frankfurth Hardware Company, Mil-  
 waukee, Wis.  
 Jno. J. Sinzich, Geo. H. Bishop & Co., Chicago.  
 Frank G. Schultz, National Enameling & Stamping Company,  
 Milwaukee, Wis.  
 F. E. Austin, Brand Stove Company, Milwaukee, Wis.  
 Ell Amundson, La Crosse Steel Roofing & Corrugating Company,  
 La Crosse, Wis.  
 E. Bingham, Hibbard, Spencer, Bartlett & Co., Chicago.  
 W. H. Bliss, Robinson Furnace Company, Chicago.  
 Geo. W. Trout, Trout Hardware Company, Chicago.  
 Morris Thomas, National Enameling & Stamping Company, Mil-  
 waukee, Wis.  
 J. G. Tucker, Loudon Machinery Company, Minneapolis, Minn.  
 Harlan S. Crane, the Fuller-Warren Company, Milwaukee, Wis.  
 R. F. Clark, R. F. Clark, Chicago.  
 L. J. Martin, Mississippi Valley Stove Company, Fulton, Ill.  
 Frank Murphy, the W. Bingham Company, Cleveland, Ohio.  
 A. Van Wyck, National Enameling & Stamping Company, Mil-  
 waukee, Wis.  
 A. E. Winter, Hibbard, Spencer, Bartlett & Co., Chicago.  
 M. L. Weinberg, Fuller-Warren Company, Milwaukee, Wis.  
 F. H. Wherry, R. J. Schwab & Sons Company, Milwaukee, Wis.  
 L. N. Larson, Milwaukee Corrugating Company, Milwaukee, Wis.  
 G. H. Lehrkind, Washington Cutlery Company, Milwaukee, Wis.  
 Fred Kusel, J. P. Lindemann & Sons, Milwaukee, Wis.  
 W. Petersen, Lyons Specialty Company, Lyons, Iowa.  
 B. F. Isbell, Lawrence Bros., Sterling, Ill.  
 J. C. Bump, Eclipse Stove Company, Mansfield, Ohio.  
 T. W. Clyborne, Estate of P. D. Beckwith, Dowagiac, Mich.  
 B. B. Bell, Hunt, Helm, Ferris & Co., Harvard, Ill.

#### CONVENTION NOTES.

The manufacturers and jobbers took the convention by storm. Their banners were hung on the inner as well as the outer walls. Fair words and good deeds were the ammunition used and the delegates surrendered at discretion.

Dowagiac, the immortal Indian chief, was strongly intrenched in the corner parlor of the Republican House, immediately opposite the convention hall, a commanding position. This year the Estate of P. D. Beckwith have cast the chief in metal, and he now adorns the handle of a souvenir spoon, in the bowl of which the Round Oak Stove will ever contribute to the comfort of coming generations. H. L. Mosher and Geo. T. Adams were lieutenants to the chief.

A huge key made of elbows and tee-joint pipe, manufactured by the A. J. Lindemann & Hoverson Company of Milwaukee, was a prominent feature in the decoration of the convention hall. It was announced to be the passport to the entire plant of the manufacturers and was presented to President Schlafer; it has already been shipped to Appleton. Each delegate, too, was presented with a small key on a souvenir ring, which admitted through a secret door to the plant. The door was made without hands.

At the 1904 convention each member will be decorated with a badge having the word "Delegate" in golden letters on a crimson silk ground, while pendant from the badge will be a golden padlock. Secretary Peck has said it, and doubtless the programme will be carried out even if the sacred surplus of the treasury is invaded.

A citizen of Kentucky, and a great admirer of Henry Watterson, once said that the champion of the star-eyed goddess was the greatest man he knew or had heard of, because he (the citizen) never read an editorial by this great man that he did not have to consult a dictionary. Does the Brand Stove Company of Milwaukee have the same idea of greatness that they presented to each delegate a lexicon that all may appreciate and come to wisdom through a spelling book?



The Simonds Mfg. Company cut their way into the hearts of the delegates through the medium of a souvenir pocketbook containing a sample Steel made by their Chicago works and fortified by a gilt-edged memorandum book.

H. O. Spencer, treasurer of the Richards Mfg. Company, Aurora, Ill., rode with easy grace into the esteem of the Hardwaremen upon the merits of the ball bearing trolley, which equips many doors in the State of Wisconsin.

Leroy Simpson, secretary of the Wilcox Mfg. Company of Aurora, Ill., was in camp, invulnerable in the mantle of his father, which is falling upon his shoulders.

The Milwaukee Corrugating Company captured the attention of the delegates with a bright display of the company's goods, taking up one complete side of the parlor used as headquarters.

O. C. Harrison was strongly intrenched behind the malleable steel Range manufactured by the Home Pride Range Company of Marion, Ind.

The campaign of the Wheeling Corrugating Company was well managed by W. J. Norris, who took the measure of the association members with a Souvenir Rule.

Many were the unwary delegates who were caught in the E. Z. Trap made at Galesburg, Ill. The Trap was baited with a bright smile, proving once more that "the best laid schemes o' mice and men gang aft a-gley." Annis D. Porter was the representative.

The enameling and stamping division was under the command of Pipp Brothers of Terre Haute, Ind., who secured advantageous quarters commanding the way to the convention hall.

The L. J. Mueller Furnace Company of Milwaukee had one of the largest contingents in the fray. Their engines of war consisted of new devices, among them being Wall Registers manipulated by the foot. They also secured and held the attention of the delegates by a souvenir clip and a lucky charm button.

A very popular souvenir, judging from the rapidity with which the supply was exhausted, was a fine leather pocket book presented by the Wm. Frankfurth Hardware Company of Milwaukee, whose strategic operations were skillfully conducted by W. Morehouse.

Geo. B. Carr, representing L. J. Mueller Furnace Company, has sprung into fame as a poet. The verse which has endeared him to traveling men is entitled "The Drummer." Here are the middle verses, but what precedes and follows are better still:

"If all the drummers should die in one night  
'Twould leave this country in a terrible plight.  
The passenger trains would rust on the rail  
And the hotel business be dead as a nail.

"No man would hear the sound of the gong,  
And livery rigs would sell for a song;  
The hinges of the theater doors would rust,  
The street cars and omnibuses crumble to dust."

A white star and crescent, with a blue ground representing zenith, is the design of a souvenir button used by the Heath & Milligan Mfg. Company. But it is said they manufacture other colors. The Marshall-Wells Hardware Company are responsible for the statement.

R. F. Clark, representing the Pelouze Scale & Mfg. Company, Chicago, and B. F. Isbell, representing Lawrence Brothers, Sterling, Ill., joined forces to capture the dealers. Clark's Husking Pins were handy weapons.

H. A. Cole was himself on the ground to direct the operations of the original Air Tight Stoves. From the principle involved one would infer that they cover some of the inventions which made Archimedes famous.

B. B. Bell, representing the Star line of Helm, Hunt, Ferris & Co., Harvard, Ill., found great demand upon his time, it being necessary to work double turn, while both the sun and stars were shining. He found great assistance in the catalogue illustrating Haying Tools, Corn Huskers, &c.

Ex-President Schlafer distributed a number of Keys, said to have been in use at Appleton in the days primeval. Their antiquity was evident on the face.

With a souvenir calendar the John Pritzlaff Hardware Company of Milwaukee welcomed the coming and sped the parting guest, but the calendar will be a constant reminder that it is time to purchase goods at Milwaukee.

The Trout Hardware Company captured 20 delegates and took them prisoners to Chicago after the convention. They were later liberated on parole.

### PRICE-LISTS, CIRCULARS, &c.

THE GENERAL FIREPROOFING COMPANY, Youngstown, Ohio: Three pamphlets describing the application and advantages of the Herringbone Expanded Steel Lath. Another pamphlet relates to the company's line of Steel Furniture and Steel Filing Equipment.

THE HORICON WIND MILL COMPANY, Horicon, Wis.: Illustrated pamphlet relating to the Horicon Steel Wind Mill.

THE HARRY UNNA COMPANY, San Francisco, Cal.: Catalogue No. 6, relating to Hardware Specialties, Household, Kitchen and Hotel Utensils, Cooking, Lighting and Heating Devices.

EDW. K. TRYON, JR., & Co., Philadelphia, Pa.: Spring catalogue, 1903, illustrating, with prices, Bicycles, Base Ball, Golf and general Sporting Goods.

THE McCABE HANGER MFG. COMPANY, 532-542 West Twenty-second street, New York: Illustrated catalogue relating to the McCabe Ball Bearing and Tubular Hangers for use on a variety of doors; Carrying Devices, Expansion Bolts, Ball Bearing Wheels of all descriptions, Rolling Store Ladders, &c.

M. RUMELY COMPANY, La Porte, Ind.: Catalogue illustrating Engines and Threshing Machinery.

THE YALE & TOWNE MFG. COMPANY, 9-13 Murray street, New York: Folder illustrating and describing Lock equipment for industrial plants.

HENRY A. DREER, 714 Chestnut street, Philadelphia, Pa.: Descriptive catalogue of Tools, Implements and Poultry Supplies.

BAILEY & BLENDINGER MFG. COMPANY, Woburn, Mass.: Printed matter devoted to illustrations and descriptions of Machine Knives in large variety, also Band Saws. The company make Knives for use on any machine.

THE GOULDS MFG. COMPANY, Seneca Falls, N. Y.: Illustrated pamphlet relating to Spray Pumps, Spraying Outfits, &c.

THE WIRT & KNOX MFG. COMPANY, 22-24 North Fourth street, Philadelphia, Pa.: Illustrated catalogue of Warehouse and Wall Reels, Factory Carts, Lawn Reels and Hose Racks.

R. E. DIETZ COMPANY, New York, issue No. 34 catalogue and price-list devoted to Tubular Lanterns, Street, Driving, Motor and Bicycle Lamps, Locomotive Headlights, Commercial, Railroad and other Lanterns. Each of these lines is shown in a variety of styles, a number of the illustrations being in colors to show the kind of globes. The company also publish Blue Book price-list No. 35.

BLACKLOCK FOUNDRY, South Pittsburgh, Pa.: Illustrated catalogue and price-list relating to Sad Irons, Cast Iron Hollow Ware, Sugar Kettles, Shoe Lasts and Stands, Sinks, Grates, &c.

## THE TRAVELING SALESMAN HIS METHODS AND CONTROL

BY SAMUEL MASTERS.

### CHAPTER VI.—Routing Maps.

ONE of the prime requisites for keeping account of the movements of salesmen is a set of maps upon which the towns covered by the various men can be designated. The ordinary State maps issued by the atlas makers are the best thing for the purpose, except in thickly populated portions of the country, such as the environs of New York, Boston and Philadelphia, or States covered thickly with small towns, such as West Virginia. Connecticut is also thickly settled—the most so of any State in the Union—but the State is small and the map is upon a scale larger than ordinary. Where the ordinary State map is upon too small a scale, other maps can be procured from State officials, the Postal Department, or in the form of sectional maps from the United States Geological Survey. They should be as nearly as possible of one size for convenience in mounting, and it is well to have them all of one issue if possible, as the uniformity in coloring and lettering adds to the convenience and legibility.

#### IMPERFECT METHODS.

The methods of working with them are various. The manager of one very large jobbing house has a different map for each traveler, with the towns covered marked with a blue pencil, folded and pigeon holed in his desk. Another has maps mounted on heavy board and hung on the walls about him, and each day the towns where his salesmen are on that particular day are indicated by large Brass Upholsterer's Nails. Still others are content to check the towns in atlases, making marks in various colors on the maps therein. All these methods are crude and imperfect, and have one fatal defect—they do not change as changes are made in the territory and indicate towns assigned rather than towns covered, which are by no means the same thing.

#### THE BETTER WAY.

At least a dozen years ago a Western jobber mounted a set of maps in the bottoms of shallow drawers and indicated the towns covered by his salesmen by driving into the maps Tacks of various sorts taken from his stock, a different kind being used for each man, and kept them up to date by the aid of field reports. This same idea has been perfected by the various map makers and dispensers of business systems, and the jobber cannot do better than to buy outright one of these routing outfits arranged to cover his particular territory. In such outfits the maps are mounted on an elastic pulp board in the bottoms of shallow drawers mounted in a case made to contain both the maps and a card index outfit to accompany it; also compartments for filing the field records mentioned in the preceding chapter. Silk Headed Tacks or Routing and Dating Pins can be bought in any desired quantity and in a vast profusion of colors, so that each salesman represented on any map will have an indicator of a distinct color. When the outfit is in charge of a routing clerk, whose entire time is devoted to this work, it is of advantage to have the outfit in the form of a desk with maps in the piers at each side, the card index and the filing boxes for reports being placed in the pigeon holes above the desk.

#### A QUESTION OF ECONOMY.

The price of these outfits is—or has been—too high. If the jobber knows just what he wants he can save money by buying the maps and pins and engaging a cabinet maker to build the case, having the maps mounted by a bookbinder. But the chances are he will not get so good an outfit and will have an incomplete and inconvenient arrangement, which will give but poor results. It will be better, in general, to pay the price and get a good routing equipment with which to begin.

#### SALESMEN SHOULD NOT TOUCH THE MAPS.

Occasionally a jobber with such an outfit contents himself with laying out the routes of his men upon it. In such a case it is of no greater value than an atlas

with towns marked, except that it is easier to refer to the mounted maps. Occasionally again a jobber will seek to keep his routes up to date by requiring the salesmen, when they come in, to go over the maps and write any changes that have occurred in their territory; but this also is defective, in that it does not show accurately the towns covered, but rather the towns assigned. The only way by which the work can be accurately done is to require field records showing the dates at which calls were made at the various towns and transfer the information to those routing maps.

#### FIRST PIN THE SALESMEN'S LISTS.

First of all let the jobber take the lists furnished by the salesmen, and by means of the indicators check them off on the maps, forcing the points of the pins or tacks firmly into the pulp board, by pressure with his thumb. The head should be well above the surface of the map, however, so as not to cover too closely the names of the towns and thus make it difficult to read them. An insertion of 3-16 inch will be ample. It will be only fair to the salesmen at the start to give them all they claim and reserve for them every town upon the lists they furnish. If two men claim the same town, as is very likely to occur, let him put two pins in for this town and trust to his reports of movements to settle the question as to whom it belongs. Probably each man has a customer in the town upon whom the other does not call.

#### FIRST RESULTS.

When the routes are all pinned the jobber will discover that some routes are not laid out economically; that a salesman will have towns lying outside the bulk of his territory and which another salesman can cover much more easily and cheaply. Such conditions are usually created by trades among the salesmen, the outside man desiring the town because for some personal reason he wants to go there, or by reason of old acquaintance he can get a good business from some particular dealer—enough to pay him to go out of his course. It is generally the case that in a salesman's estimation the towns on the other routes are better than his, and it is not hard to effect a trade. When the routes are properly laid under ordinary conditions each one should be so distinct and separate that a string can be drawn around the outlying pins inclosing the territory without having therein any of the towns belonging to other routes, and showing a compact body of towns, lying along contiguous railroads and arranged so as to make the shortest possible distance between stops. Often in the smaller towns, when two are near enough together, a salesman can cover two in a day, particularly if trolley lines connect the two. On driving routes a man can, in certain localities, cover three or four hamlets in a day and do business with the merchant in each.

#### UNOCCUPIED TERRITORY DESIGNATED.

Having finished pinning the towns covered the jobber can take account of the remainder. He should select a pin of some unobtrusive color with which to mark these, so as not to create confusion in looking over the routes. A white or very light pink or green is best. Now let him take the latest procurable census statistics as a guide, and after deciding where to set the lowest limit of desirability pin all the uncovered towns he desires to add in the "vacant" color. If desired he can use one color—say white—for towns with less than 1000 population and pink for towns containing over 1000 inhabitants. When this is done he will have on each map a bird's eye view of the territory showing the places covered and what he should cover. It is easy with this record before him for him to trace out the course each salesman would naturally take in covering the ground and to decide to which of the salesmen the unoccupied towns should belong, if it happens that they are not so situated that they can be placed upon a new route.

#### WHAT THE MAPS TELL HIM.

He will find seemingly good towns in the heart of a route neglected while the incumbent takes up other towns too far from his main route. He will find at times a series of towns along a cross road unvisited that the salesman may stick to the main lines of travel with



more frequent trains and better hotels. He will find good towns which he supposed were covered which the men have dropped from their routes, saying nothing, and which are now claimed by nobody. He will be fortunate if he can find in a compact, travelable shape enough towns to make a new route. At times he will find a half or two-thirds of a route unoccupied, and in order to send out a new man to cover them must draw upon the old routes for enough towns to complete the new—and here is where the value of the system begins to be apparent.

## HOCKADAY HARDWARE COMPANY'S CATALOGUE.

THE HOCKADAY HARDWARE COMPANY of Wichita, Kan., have issued their first general catalogue. The whole edition, 2100 copies, is bound in black flexible leather, each customer's name being printed in gold on the cover. It has been the design of the company to issue a comprehensive catalogue, well illustrated and all descriptions brief and plain to facilitate selection of goods by customers. It will be noted that the weight and freight classifications of each article are given, a desirable feature. The index is printed on pink paper and the other departments are distinguished by different tinted papers, the general Hardware department being in white, the Heavy Hardware in blue and the Sporting Goods in pink. This arrangement will doubtless be appreciated by the busy business man. The compilation of the book required a little less than six months and the first copy was completed on January 2. The compiling, printing and binding were all done at Wichita. The trade-mark of the company, an American Indian of heroic type, bearing the coined name Kanokla, is a conspicuous feature of the catalogue. The word Kanokla is coined from the two abbreviations, Kan. for Kansas and Okla. for Oklahoma.

## MISCELLANEOUS NOTE.

### Baker Gun & Forging Company.

In connection with their regular line, with which the trade are familiar, the Baker Gun & Forging Company, Batavia, Ill., are now building guns of a somewhat lower grade and also others of a higher grade than those represented in their catalogue. They advise us that they are now making a strictly high class hammerless gun, called Leader, which is intended to retail at \$25. They are also making their Paragon grade in special patterns with Krupp fluid steel and Whitworth fluid steel barrels, which they call Special Paragons and which range in price from \$75 to \$200 net.

### Star Expansion Bolt Anchors.

J. Edward Ogden Company, 147 Cedar street, New York, are manufacturing the expansion bolt anchors here illustrated. Fig. 1 illustrates the Star expansion bolt and anchor, which is made as illustrated and also with a smooth outer shell, both kinds of which are of malleable iron. A feature of this anchor is that there is a clearance of 1 inch, more or less, according to size, beginning at the outer end, so that any ordinary lag screw can be used instead of being compelled to buy both an-

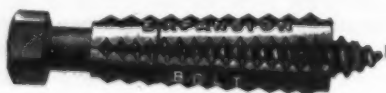


Fig. 1.—Star Expansion Bolt Anchor.

chors and lag screws of the maker, as unless the lag screw is threaded specially well up to the head it will only enter the anchor as far as the thread extends. Thus a dealer can carry a stock of anchors and utilize his own stock of lag screws. The anchors are made in all sizes, from 5-16 to 1 1/4 inches in diameter inclusive, increasing by eighths, and in long and short lengths, according to

the diameter. The lag screw, from its peculiar construction, immediately on entering the anchor causes a lateral motion, which in turn causes the anchor to firmly grip the sides of the hole in the case of the smooth outer surface anchor and prevents the shell rotating with the screw. The anchors with smooth outer surfaces are designed for such materials as granite, marble, onyx, &c., where the grain of the stone is uniformly fine and the hole can be drilled, for which purpose they furnish the Star hand forged pipe drill. The anchor shown in



Fig. 2.—Star Screw Anchor.

Fig. 1, with projections, is intended for brick work, concrete and similar materials, thus giving greater holding power in a somewhat softer material. Both anchors are temporarily held together by a circular wire, its purpose being to keep the shells in pairs until used. The Star screw anchor, Fig. 2, is used with any ordinary wood or machine screw, flat or oval head, any thread, and any length to suit the work. The anchor is made of a soft composition metal in one piece, the construction of which allows the screw to cut its own thread. This anchor is made in eight sizes and four diameters, of various lengths, 1/2 to 1 inch inclusive, numbered 6, 10, 14 and 18, which are the same as screws of like numbers. These anchors are recommended for use in connection with such work as marble and tile materials, also for plumbers, as well as electrical, telegraph and telephone companies for running wires from building to building.

### Lineman's Climber.

The Smith & Hemenway Company, 296 Broadway, New York, are manufacturing the lineman's climber No. 153, here illustrated, in connection with their large



Lineman's Climber No. 153.

line of pliers and telephone outfits. This climber is made of an especially tough steel, hardened and tempered and then covered with a heavy coating of white metal to prevent rust. The spur is welded in, thus making it practically one piece, as well as a part to depend on. The loops are made in the forging.

### The Avery Patented Plain Back Shovels.

In the manufacture of shovels shown in Fig. 1 of the accompanying cuts, and in the regular line of shovels, spades and scoops made by the Avery Stamping Company, Cleveland, Ohio, each individual blank is rolled singly, both sides coming in contact with the rolls, receiving, it is explained, a comparatively greater amount



Fig. 1.—The Avery Patented Plain Back Shovel.

of stiffness, toughness, density and wearing quality. After the blade is forged a piece of steel is welded to the back and carried up underneath the socket and there incased with the handle, no wood showing as in old style shovels. The manufacturers claim that although the back of the shovel may wear through, the blade itself is intact, and that the shovel remains serviceable. In Fig. 2 is shown the shorter fulcrum of the Avery shovel in comparison with the longer fulcrum of the

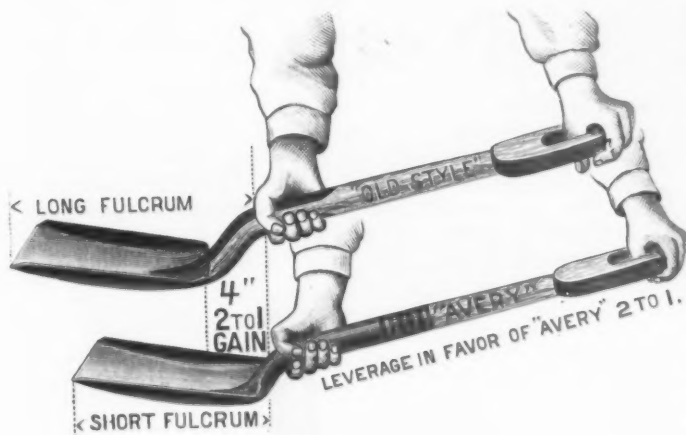
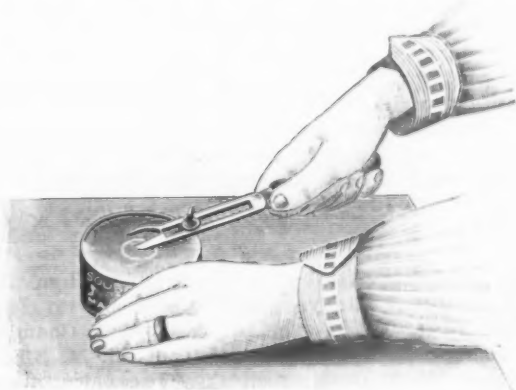


Fig. 2.—Reduced Leverage.

old style shovel. It is claimed that with Avery shovels laborers are enabled to do more effective work with less fatigue; also that the shovels are well balanced. The shovels are made in the four regular grades, and are referred to by the manufacturers as equal to any shovels on the market as to wearing quality, style and finish, grade for grade.

### The Twentieth Century Can Opener.

Premo-Hall Mfg. Company, 50-58 Columbia street, Newark, N. J., are offering the can opener shown here-



The Twentieth Century Can Opener.

with. The blade of the opener is made of polished steel, so formed at the point as to open round or square cans.

The opener is referred to as cutting with a clean, even stroke, turning the remaining edge on the can down and leaving no rough edge, so that the hand may be inserted through the opening of the can and withdrawn without fear of scratching or cutting. By means of the thumb screw the knife may be adjusted for a can of any diameter, from a condensed milk can to a large varnish can. The thumb screw is to hold the knife securely in place and to prevent slipping.

### The Yost Key Socket.

The accompanying cuts represent the construction and working parts of the key socket offered by the Yost Electric Mfg. Company, Toledo, Ohio. The bayonet slot, with pin at the extreme closed end of the slot, Fig. 1.

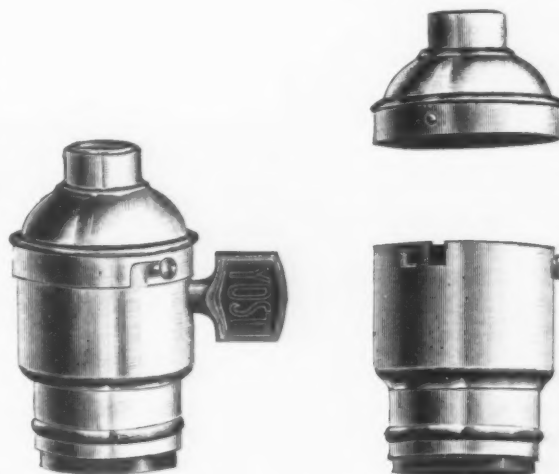


Fig. 1.—The Yost Key Socket. Fig. 2.—Cap and Shell of Socket.

indicates that the device is locked. When turned so as to bring the pin to the open end of the slot it indicates that it is open and can be separated as in Fig. 2. This method of locking the cap and shell is referred to as one of the novel features in the construction of the socket. The key has a long, firm bearing in the porcelain interior of the socket, which rigidly holds it in place. The cam and mechanism of the socket shown in Fig. 3 is

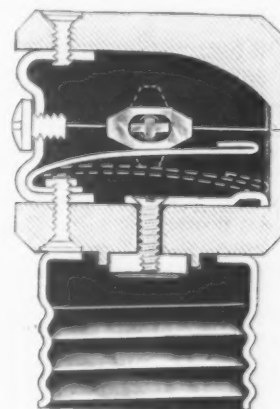


Fig. 3.—Mechanical Construction of Socket.

arranged so that a quick and positive break is made of over  $\frac{3}{8}$  inch. The current is carried by ample strong brass posts, which are referred to as being fully up to the requirements and to spare, while attention is called to the small number of parts. The sockets are alluded to as being well made, well finished and with parts interchangeable, as they are made by automatic machinery.

Nap. D. Lafleur, formerly with the Thompson Hardware Company, has gone into business for himself at 11 East Merrimack street, Lowell, Mass. Mr. Lafleur will handle Hardware, Paints, Oils, &c.



### Bardsley's Spring Door Holder.

Joseph Bardsley, 147-151 Baxter street, New York, is just putting on the market the Bardsley spring door holder, here illustrated. It is attached to the bottom of a door with three wood screws, so that when the lever is up, as in Fig. 1, the rubber contact disk is either 1 or 1½ inches from the floor, according to the size of the holder, which is made in medium, No. 42, and large, No. 43. The plate in No. 42 is 6 x 2 inches over all, not measuring the curved upper portion, the No. 43 being an inch longer, but practically the same height, with correspondingly heavier parts. The lever is controlled by a substantial coil wire spring parallel with the walls of the lever. In use a push with the foot on the rubber



Fig. 1.—Bardsley's Spring Door Holder.

end forces it into contact with the floor, a similar push on the other end releasing it, Fig. 2 showing the holder in operation and how to apply it. The plate has sufficient surface to protect the wood from a misdirected kick and prevent marring the door. The holders are made of iron, finished in Berlin bronze; also of brass and bronze in any of the various finishes. The holder

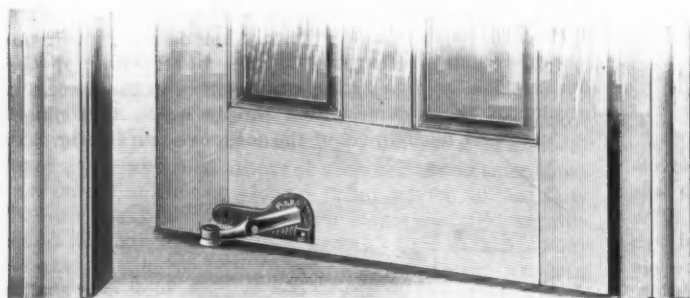


Fig. 2.—Holder in Operation.

can be placed on either side of the door and will not disfigure hard wood floors.

### Mills' Patent Aluminum Golf Clubs.

The Bridgeport Gun Implement Company, Bridgeport, Conn., and 313-317 Broadway, New York, as sole



Fig. 1.—Mills' Aluminum Putter, Side View.

agents in the United States for the Standard Golf Company, Sunderland, England, are introducing a new line

of aluminum golf clubs, Mills' patent, as here illustrated, thus supplementing an already large line of similar goods of their own production. Figs. 1 and 2 represent two



Fig. 2.—Top View of Mills' Aluminum Putter.

views, side and top, of the Mills aluminum putter, of which there are five modifications as to length and depth,

some of which have been modeled exactly after putters used by both professional and amateur English champions. Fig. 3 illustrates one of a series of clubs all somewhat similar in general appearance, variously known as cleek, driving mashy, mild iron, lofted and pitching



Fig. 3.—Mills' Aluminum Lofted.

mashy, the difference consisting in the loft of face, or striking surface, which is least in the cleek and greatest in the pitching mashy. It is claimed for these clubs that they are of perfect balance, because the center of gravity in each club is exactly in the middle of the head, which prevents pulling and slicing, and that they are always bright for the reason they cannot rust. These goods, together with the niblicks, drivers, brasseys and brasseys spoons, are fully illustrated and described in a booklet issued by the company. They also carry a full line of left-hand models and make a specialty of women's clubs.

The Chambers Hardware Company, wholesale and retail, Oil City, Pa., have been incorporated with a capital stock of \$50,000. The officers are Fred. N. Chambers, president; J. R. Adams, vice-president; H. M. Nichols, treasurer; W. J. Gealy, secretary. The new company are successors to Fred. N. Chambers and the South Side Hardware Store. They expect to continue business as usual at both stands, and have broken ground for a new three-story brick building, with basement, 136 x 22 feet. The first floor will be used as a storeroom and tin shop and the balance for warerooms.

# Current Hardware Prices.

REVISED FEBRUARY 10, 1903.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33 1/2 @ 33 1/3 & 10% signifies that the

price of the goods in question ranges from 33 1/2 per cent. discount to 33 1/3 and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued April, 1902, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Abrasives—

Adamite in Carloads:

Crystal..... 1 ton \$90@100

Grain..... 1 ton \$120@140

See also Emery.

## Adjusters, Blind—

Domestic..... 1 doz. \$3.00..... 33 1/2

North's..... 1 doz. \$3.00..... 10%

Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent..... 25¢

Taplin's Perfection..... 25¢

**Ammunition**—See Caps, Cartridges, Shells, &c.

## Anvils—American—

Armand Hammer, Wrought..... 1 lb. \$8.00@8.50

Buel Patent Trenton..... 1 lb. \$10.00@10.50

Eagle Anvils..... 1 lb. \$7.00@7.50

Hay-Budden, Wrought..... 1 lb. \$10.00@10.50

Horsehoe brand, Wrought..... 1 lb. \$10.00@10.50

**Imported—**

Peter Wright & Sons..... 1 lb. \$10.00@10.50

## Anvil, Vise and Drill—

Miller's Falls Co., \$18.00..... 50¢

**Apple Parers**—See Parers, Apple, &c.

## Aprons, Blacksmiths'—

Hull Bros. Co.,

Lots of 1 doz..... 25%

Smaller Lots..... 30%

Lots of 3 doz..... 30%

## Augers and Bits—

Com. Double Spur..... 70¢

Boring Machine Augers..... 70¢

Car Bits, 12-in. twist..... 60¢

Jennings' Pattern

Auger Bits..... 50¢

Ford's Auger and Car Bits..... 40%

Fortner Pat. Auger Bits..... 25%

C. E. Jennings & Co.,

No. 10 ext. lip, R. Jennings' list 35¢

No. 30, R. Jennings' list 40¢

Russell Jennings..... 25¢

L'Hommedieu Car Bits..... 15¢

Mayhew's Countersink Bits..... 45%

Miller's Falls..... 50¢

Pugh's Black..... 20%

Pugh's Jennings' Pattern..... 35%

Snell's Auger Bits..... 60%

Snell's Bell Hangers Bits..... 50¢

Snell's Car Bits, 12-in. twist..... 60%

Wright's Jennings Bits (R. Jennings' list)..... 50%

## Bit Stock Drills—

Standard List..... 65¢

## Expansive Bits—

Clark's small, \$15; large, \$20..... 50¢

Lavigne's Clark's Pattern, No. 1, \$10..... 50¢

C. E. Jennings & Co., \$21.85..... 50¢

Swan's..... 60%

## Gimlet Bits—

Common Double Cut, gro. \$2.50@3.00

German Pattern..... \$4.00@4.50

## Hollow Augers—

Booney Pattern, per doz. \$11.00@11.50

Ames..... 35¢

New Patent..... 45¢

Universal..... 20%

Wood's Universal..... 25%

## Ship Augers and Bits—

Ford's..... 40%

Snell's..... 40%

C. E. Jennings & Co.,

L'Hommedieu's..... 15¢

Watrous'..... 35¢

**Awl Hafts, See Hafts, Awl.**

**Awls—**

Brad Awls:

Handled..... gro. \$2.75@3.00

Unhandle, Shouldered, gro. \$3.00@3.50

Unhandle, Patent..... gro. \$3.00@3.50

Peg Awls:

Unhandle, Patent..... gro. \$1.00@1.50

Unhandle, Shouldered, gro. \$1.00@1.50

Scratch Awls:

Handled, Common..... gro. \$1.00@1.50

Handled, Socket..... gro. \$1.50@2.00

Hurwood..... 40%

**Awl and Tool Sets—See Axes.**

**Axes—**

First Quality, factory brands..... \$5.00

First Quality, jobbers' brands..... \$5.50

Second Quality..... \$5.00@5.50

**Axe Grease—See Grease, Axes.**

**Axles—**

Concord, Loose Collar..... 45¢

Concord, Solid Collar..... 55¢

No. 1 Common..... 35¢

No. 1 1/2 Com. New Style..... 45¢

No. 2 Solid Collar..... 45¢

No. 11 to 14..... 65¢

No. 15 to 18..... 75¢

No. 19 to 22..... 75¢

## Boxes, Axle—

Common and Concord, not turned..... 1 lb. \$4.00@4.50

Common and Concord, turned..... 1 lb. \$4.00@4.50

Half Patent..... 1 lb. \$8.00@8.50

## Balances—

Caldwell new list..... 50%

Fullman's..... 60%

## Spring—

Spring Balances..... 50¢

Chatillon's:

Light Spg. Balances..... 40¢

Straight Balances..... 40%

Circular Balances..... 50%

Large Dial..... 30%

Pelouze..... 50%

## Barb Wire—See Wire, Barb.

## Bars—

Steel Cranebars, 10 to 40 lb., per lb..... 25¢

## Towel—

No. 10 Ideal, Nickel Plate..... \$8.50

No. 20 Ideal, Brass Finish..... \$9.50

## Baskets—

Hoffman's Brick Baskets..... each \$3.25

## Beams, Scale—

Scale Beams, List Jan. 12, '85..... 10%

Chatillon's No. 1..... 30%

Chatillon's No. 2..... 40%

## Beaters—

Lightning Chain, \$ doz. \$1.15; \$ gro..... \$12.00

National Mfg. Co.,

No. 1 Dover, Family size..... \$7.00

No. 2 Dover, Hotel size..... \$14.00

Taplin Mfg. Co., \$ gro..... \$8.50

No. 69 Improved Dover..... \$7.50

No. 75 Improved Dover..... \$7.50

No. 75-2 Imp'd Dover, Tin'd..... \$8.00

No. 100 Improved Dover..... \$8.00

No. 102 Improved Dover, Tin'd..... \$9.50

No. 150 Improved Dover, Hotel..... \$15.00

No. 152 Imp'd Dover, Hotel, T'd..... \$17.00

No. 200 Imp'd Dover Tumbler..... \$19.00

No. 302 Imp'd Dover Fambler, Tin'd..... \$40.00

No. 300, Imp'd Dover Mammoth, \$ doz..... \$27.00

Wonder (S. S. & Co.)..... \$ gro. \$20.00

## Bellows—

Blacksmith, Standard List..... 70¢

## Blacksmiths'—

Inch..... 30 32 34 36 38 40

Each..... \$3.50 3.75 4.25 4.50 5.35 6.15

Extra Length:

Each..... \$4.00 4.55 5.10 5.60 6.40 7.50

## Molders—

Inch..... 9 10 11 12 14 16

Doz..... \$6.75 7.25 8.50 9.50 12.00 14.50

## Hand—

Inch..... 7 8 9 10 12

Doz..... \$4.75 5.25 5.75 6.25 7.00 8.00

## Bells—

Ordinary goods..... 75¢

High grade..... 70¢

Jersey..... 75¢

Texas Star..... 50%

## Door—

Abbe's Gong..... 45%

Barton Gong..... 55%

Rome, R. & E. Mfg. Co.'s..... 55¢

Lever and Pull, Sargent's..... 60¢

Yankee Gong..... 55%

## Hand—

Hand Bells, Polished..... 60¢

White Metal..... 55¢

Nickel Plated..... 50¢

Swiss..... 60¢

Cone's Globe Hand Bells..... 35¢

Silver Chime..... 35¢

**Miscellaneous—**

Farm Bells..... 1 lb. \$2.00@2.50

Steel Alloy Church and School..... 60%

American Tube & Stamp's Co. Gongs..... 70%

Trip Gong Bells..... 55¢

**Belting—Rubber—**

Agricultural (Low Grade)..... 75¢

Common Standard..... 75¢

Standard..... 70¢

Extra..... 60¢

High Grade..... 80¢

Boston Belting Co.,

Seamless Stretched Imperial..... 45%

Boston..... 50%

Niagara..... 60%

**Leather—**

Extra Heavy, Short Lap..... 60¢

Regular Short Lap 60¢

Standard..... 70¢

Light Standard..... 70¢

Cut Leather Lacing..... 60¢

Leather Lacing Sides, per sq. ft. 15¢

## Cotton—

Rossendale-Toddaway B. & H. Co.,

Sphinx Brand..... 80¢

Durable Brand..... 70%

## Bench Stops—See Stops, Bench

## Benders and Upsetters, Tire—

Detroit Perfected Tire Bender..... 40%

Green River Tire Benders and Upsetters..... 50%

Detroit Stoddard's Lightning Tire Upsetters, No. 1, \$3.75; No. 2, \$6.50; No. 3, \$9.50; No. 4, \$14.75; No. 5, \$18.75.

## Bicycle Goods—

John S. Long's Son's 1902 list:

Chain..... 50%

Spokes..... 50%

Spokes..... 50%

Spokes..... 50%

Spokes..... 50%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—

See Augers and Bits.

## Blocks—

Common Wooden..... 70¢

Hollow Steel Blocks, with Ford's Patent Sheaves..... 50¢

Lang's Patent Automatic Lock and Junior..... 30%

Stowell's Novelty, Mal. Iron..... 50%

See also Machines, Hoisting.

## Beards Stove—

Zinc, Crystal, &c..... 40¢

## Boils—

Carriage, Machine &c.—

Common, list Feb. 1, '02..... 60¢

Norway Iron, \$3.00, list Jan. 1, '99..... 80¢

Phila. Eagle, \$3.00 list May 21, '99..... 80¢

Phila. Eagle, \$3.00 list May 21, '99..... 80¢

Phila. Eagle, \$3.00 list May 21, '99..... 80¢

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Phila. Eagle, \$3.00 list May 21, '99..... 80¢

Phila. Eagle, \$3.00 list May 21, '99..... 80¢

Phila. Eagle, \$3.00 list May 21, '99..... 80¢

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**Cartridges—****Blank Cartridges:**

38 C. F. \$5.50.....	10¢55
38 C. F. \$7.00.....	10¢55
22 cal. Rim. \$1.50.....	10¢55
32 cal. Rim. \$2.75.....	10¢55
B. B. Caps, Con., Ball Sngd. \$1.90	
B. B. Caps, Round Ball.....	\$1.49
Central Fire.....	25¢
Target and Sporting Rifle.....	15¢55
Primed Shells and Bullets.....	15¢10
Rim Fire Sporting.....	50¢
Rim Fire Military.....	15¢55

**Casters—**

Bed.....	70¢70¢10¢
Plate.....	60¢60¢55¢
Philadelphia.....	75¢75¢10¢
Boss.....	70¢10¢
Boss Anti-Friction.....	70¢10¢
Martin's Patent (Phoenix).....	45¢
Standard Bearing.....	45¢
Tucker's Patent low list.....	30¢

**Cattle Leaders—**

See Leaders, Cattle.

**Chain, Coll—**

American Coll. Jobbers' Shipments:	
5-16 3/4 5-16 3/8 7-16 1/2 9-16	
8-50 6-5 6-30 4-00 3-30 3-70 3-65	
3/4 3/4 3/4 1 1/2 1 3/4 inch.	
3-61 3-55 3-50 3-40 per 100 lb.	
German Coll.....	60¢10¢10¢

**Halters and Ties—**

Halter Chains.....	60¢10¢60¢10¢
German Halter Chain, list July 21, '97.....	60¢10¢60¢10¢
Cow Ties.....	50¢10¢60¢

**Trace, Wagon, &c.—**

Traces, Western Standard: 100 pair	
6 1/2-6-3, Straight, with ring.....	\$30.00
6 1/2-6-2, Straight, with ring.....	\$31.00
6 1/2-8-2, Straight, with ring.....	\$35.00
6 1/2-10-2, Straight, with ring.....	\$39.00
Add 2¢ per pair for Hooks.	
Twist Traces 2¢ per pair higher than	
Straight Link	
Trace, Wagon and Fancy Chains.....	50¢10¢50¢10¢

**Miscellaneous—****Jack Chain, list July 10, '93:**

Iron.....	60¢10¢60¢10¢
Brass.....	60¢10¢60¢10¢
Safety Chain.....	70¢10¢75¢
Gal. Pump Chain.....	40¢45¢
Covert Mfg. Co.	

**Breast.....**

Breast.....	40¢25¢
Halter.....	40¢25¢
Heel.....	40¢25¢
Rein.....	40¢25¢
Stallion.....	40¢25¢

**Covert Saddle Works:**

Breast.....	70¢
Halter.....	70¢
Old Back.....	70¢
Rein.....	70¢
Onoda Company.....	70¢

**Am. Coll and Halters.....**

Am. Coll and Halters.....	40¢45¢50¢
Eureka Coll and Halter.....	45¢50¢55¢
Niagara Coll and Halters.....	45¢50¢55¢
Niagara Cow Ties.....	45¢50¢10¢55¢
Wire Dog Chains.....	45¢50¢55¢

**Wire Goods Co.:**

Dog Chain.....	70¢10¢
Universal Dbl-Jointed Chain.....	50¢

**Chalk—(From Jobbers.)**

Carpenters' Blue.....	gro. 10¢45¢
Carpenters', Red.....	gro. 35¢40¢
Carpenters', White.....	gro. 30¢35¢

**See also Crayons.****Checks, Door—**

Bardley's.....	40¢10¢
Columbia.....	50¢10¢
Eclipse.....	60¢

**Chests, Tool—**

American Tool Chest Co.:	
Boys' Chests, with Tools.....	55¢
Youths' Chests, with Tools.....	40¢
Gentlemen's Chests, with Tools.....	30¢
Farmers', Carpenters', etc., Chests,	
with Tools.....	30¢
Machinists' and Rip Platers' Chests.....	30¢
Empty.....	30¢
C. E. Jennings & Co.'s Machinists' Tool	
Chests.....	33¢35¢10¢

**Chisels—****Socket Framing and Firmer**

Standard List.....	70¢70¢10¢
Buck Bros.....	30¢
Charles Buck.....	30¢
C. E. Jennings & Co. Socket Firmer	
No. 10.....	60¢10¢
C. E. Jennings & Co. Socket Framing	
No. 15.....	60¢10¢
Swan's.....	70¢
L. & J. White.....	80¢90¢55¢

**Tanged—**

Tanged Firmers.....	10¢55¢40¢10¢
Buck Bros.....	30¢
Charles Buck.....	30¢
C. E. Jennings & Co. Nos. 191, 181.....	16¢21¢
L. & J. White, Tanged.....	35¢55¢

**Cold—**

Cold Chisels, good quality, lb. 12¢15¢	
Cold Chisels, fair quality, lb. 11¢12¢	
Cold Chisels, ordinary, lb. 8¢9¢	

**Chucks—**

Beach Pat. each \$8.00.....	35¢55¢
Pratt's Positive Drive.....	25¢
Empire.....	25¢
Blacksmith's.....	25¢
Skinner Patent Chucks:	

Combination Lathe Chucks.....	40¢
Drill Chucks, Patent and Standard.....	30¢
Drill Chucks, New Model.....	25¢
Independent Lathe Chucks.....	25¢
Improved Planer Chucks.....	25¢
Universal Lathe Chucks.....	40¢
Face Plate Jaws.....	40¢
Standard Tool Co.:	
Improved Drill Chuck.....	45¢
Union Mfg. Co.:	
Combination.....	40¢
Car Drill.....	30¢
Geared Scroll.....	30¢
Independent.....	40¢
Union Drill.....	40¢
Universal.....	40¢
Face Plate Jaws.....	35¢

**Crackers, Nut—**

Little Giant.....	gr. \$3.00
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**Cradles—**

Grain.....	50¢
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**Cravens—**

White Round Crayons, gross 5 1/2 @ 6¢	
Cases, 100 gro., \$4.50, at factory.	

**Wescott Patent Chucks:**

Lathe Chucks.....	50¢
Little Giant Auxiliary Drill.....	40¢
Little Giant Double Grip Drill.....	40¢
Little Giant Drill, Improved.....	40¢
Onoda Drill.....	40¢
Scroll Combination Lathe.....	40¢

**Clamps—**

Adjustable, Hammers.....	20¢20¢55¢
Cabinet, Sargent's.....	50¢10¢
Carriage Makers' P., S. & W. Co.....	50¢
Carriage Makers' Sargent's.....	60¢
Beatty, Parallel.....	35¢40¢
Linemans, Ulica Drop Forge & Tool Co.....	40¢
Saw Clamps, see Vises, Saw Filers.	

**Cleaners Sidewalk—**

Star Socket, All Steel.....	gr. doz. \$4.05 net
Star Shank, All Steel.....	gr. doz. \$3.24 net
W. & C. Shanz, All steel, 7 1/2 in. gr. doz.	
\$3.05; 8 in., \$3.10; 8 1/2 in., \$3.25.	

**Cleavers, Butchers'—**

Poste & Co.....	30¢
New Haven Edge Tool Co.....	45¢
Fayette R. Plumb.....	33¢45¢50¢10¢
P. S. & W.....	50¢50¢55¢
L. & J. White.....	25¢

**Clippers—**

Chicago Flexible Shaft Company:	
98 Chicago horse.....	\$8.75
1902 Chicago Horse.....	\$10.75
Lightning Belt.....	\$15.00
Chicago Belt.....	\$20.00
Stewart's Patent Sheep.....	\$18.50

**Clips, Axle—**

Eagle and Superior 1/4 and 5-16	
inch.....	70¢10¢
Norway, 1/2 and 5-16 inch.....	70¢70¢10¢

**Cloth and Netting, Wire**

—See Wire, &amp;c.

**Cocks, Brass—****Hardware list:**

Compression and Plain Bibbs.....	65¢50¢65¢10¢
Globe, Kerosene, Racking, &c.....	65¢10¢70¢

**Coffee Mills—See Mills, Coffee.****Collars Dog—**

Brass, Walter B. Stevens & Son's list, 40¢	
Embossed, Gilt, Walter B. Stevens &	
Son's list.....	30¢10¢
Leather, Walter B. Stevens & Son's list, 40¢	

**Combs Mane and Tail—**

Covert's Saddlery Works..... 60¢10¢

**Compasses Dividers, &c.**

Ordinary Goods.....	75¢75¢55¢
Bemis & Call Hdw. & Tool Co.:	
Dividers.....	65¢
Callipers, Call's Patent Inside.....	35¢
Callipers, Double.....	65¢
Callipers, Inside or Outside.....	65¢
Callipers, Wing.....	60¢
Compasses.....	50¢
J. Stevens A. & T. Co.....	25¢10¢

**Compressors Corn Shock—**

J. B. Hughes' gr. doz..... \$2.50

**Conductor Pipe, Galva.—**

L. C. L. to Dealers:

Territory.....	Noted.
Eastern.....	75¢75¢
Central.....	75¢75¢
Southern.....	70¢75¢
S. Western.....	65¢10¢10¢
Terms, 25 for cash. With delivery on	
fuel crates.	
Jobbers sometimes cut above prices.	
See also Eave Troughs.	

**Coolers, Water—**

Gal, each.....	3 1/2 4 6 8
Laborator \$1.20 \$1.50 \$1.80 \$2.10 2.70	
Gal.....	3 1/2 4 6 8
Icealind, ea. \$1.80 \$2.10 \$2.40 \$3.00	
Gal.....	3 1/2 4 6 8
Galv. Lined Ea. \$1.55 \$2.00 \$2.35 \$2.90 \$3.90	
Gal.....	2 1/2 3 4 6 8
Galv. Lined handles	
Gal.....	2 1/2 3 4 6 8
Each.....	\$1.35 \$2.15 \$2.40 \$3.00 \$4.15, 25¢

**Coopers' Tools—**

See Tools, Coopers'.

**Cord—****Sash—**

Braided, Drab.....	lb. 25¢
Braided, White, Com.....	lb. 17 1/2¢18¢
Cable Laid Italian.....	lb. A, 15¢; B, 16¢
Common India.....	lb. 9 1/2¢
Cotton Sash Cord, Twisted.....	lb. 12¢10¢
Patent Russia.....	lb. 12 1/2¢13¢
Cable Laid Russia.....	lb. 13 1/2¢14¢
India Hemp, Braided.....	lb. 14¢15¢
India Hemp, Twisted.....	lb. 10¢12¢
Patent India, Twisted.....	lb. 10¢12¢
Pearl Braided, cotton.....	lb. 17 1/2¢
Massachusetts, White.....	lb. 2 1/2¢
Massachusetts, Drab.....	lb. 2 1/2¢
Eddystone Braided Cotton.....	lb. 19¢
Harmony Cable Laid Italian.....	lb. 18¢
Ossawa Mills:	
Crown, Solid Braided White.....	lb. 22¢
Braided, Giant, White.....	lb. 20¢
Peerless:	
Cable Laid Italian.....	16¢
Cable Laid Russian.....	14¢
Cable Laid India.....	12¢
Braided India.....	18¢
Phonix, White.....	18¢
Ramson, Nos. 7 to 12:	
Braided, Drab Cotton.....	lb. 32¢4¢
Braided, Italian Hemp.....	lb. 24¢4¢
Braided, Linen.....	lb. 49¢
Braided, White Cotton, Spot.....	lb. 28¢4¢
No. 6 cords, 1¢ extra.	
Silver Lake:	
A quality, Drab, 40¢.....	15¢
A quality, White, 35¢.....	15¢
B quality, Drab, 35¢.....	15¢
B quality, White, 30¢.....	15¢
Italian Hemp, 40¢.....	15¢
Linen, 57¢.....	15¢

**Wire, Picture—**

List Oct. 10, 35¢10¢10¢ to 35¢10¢10¢10¢

**Crackers, Nut—**

Little Giant.....	gr. \$3.00
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**Cradles—**

Grain.....	50¢
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**Cravens—**

White Round Crayons, gross 5 1/2 @ 6¢	
Cases, 100 gro., \$4.50, at factory.	

**D. M. Steward Mfg. Co.**

Metal Workers' Crayons, gr. \$2.50	
Soapstone Pencils, round, flat	
or square.....	gr. \$1.50
Rolling Mill Crayons.....	gr. \$2.50
Railroad Crayons (compo-	
sition) gr. \$2.00	

**See also Chalk.****Crooks, Shepherds'—**

Fort Madison, Heavy.....	gr. doz. \$7.00
Fort Madison, Light.....	gr. doz. \$6.50

**Crow Bars—See Bars, Crow.****Cultivators—**

Victor Garden.....	50¢
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**Cutlery Table—**

International Silver Company:	
No. 12 Medium Knives, 18 1/2.....	gr. doz. \$9.50
Star, Eagle, Rogers & Hamilton and	
Anchor.....	gr. doz. \$3.00
Wm. Rogers & Son.....	gr. doz. \$2.50

**Simeon & Geo. H. Rogers Company:**

12 doz. Medium Knives.....	gr. doz. \$3.00
No. 77 Medium Knives.....	gr. doz. \$2.50

**Cutters—**

H. H. Mayhew Co.....	40¢
Red Devil.....	50¢
Smith & Hemenway Co.....	50¢
Woodward.....	40¢

**Meat and Food—**

Hale's, Nos. 11 & 112 & 113 13 & 113	
Per doz.....	\$3.00 10.75 14.50
American.....	80¢
Nos.....	5 10 19 23 32
Each.....	\$3 \$3 \$2.50 \$4 \$6
Dixon's, gr. doz.....	30¢10¢40¢
Nos.....	\$14.00 \$17.00 \$19.00 \$30.00
Home No. 1, gr. doz.....	\$22.75
Little Giant, gr. doz.....	\$35.00
Nos. 305 310 312 340 322	
\$35.00 \$48.00 \$44.00 \$73.00 \$68.00	
N. E. Food Choppers.....	40¢
Stirling.....	30¢10¢40¢
No. 1.....	\$2.00 each No. 2..... \$2.50 each
New Triumph No. 605, gr. doz.....	\$24.00
Woodruff's, gr. doz.....	30¢10¢40¢
Nos.....	100 150
Enterprise Beef Shavers.....	\$15.00 \$18.00

**Slaw and Kraut—**

Henry Diston & Sons:	
Slaw, Corn, Water, &c.....	40¢
Kraut Cutters 24 x 7, 26 x 8, 30 x 9, 35 x	
Kraut Cutters 38 x 12, 40 x 12.....	40¢
Sterling, 60.00 each.....	33 1/2¢

**Tucker & Dorsey Mfg. Co.:**

Kraut Cutters.....	40¢
Slaw Cutters, 1 Knife, gr.....	\$18.00 \$20.00
Slaw Cutters, 2 Knife, gr.....	\$22.00 \$26.00

**Tobacco—**

N. E. Food Choppers.....	40@40&l
Sterling... ..	40@40&l
No. 1.....	\$2.00 each
No. 2.....	\$2.50 each
New Triumph No. 605. 3 doz.	\$24.00

**Gates, Molasses and Oil—**  
Stebbins'..... 80¢ @ 10¢ 5/8**Gauges—**Marking, Mortise, &c.,..... 50¢ @ 10¢ 5/8 @ 10¢ 10/16  
Fulton's Butt Gauge..... 3¢ @ 10¢  
Stanley R. & L. Co.'s Butt & Rabbet Gauge..... 20¢ @ 20¢ 10¢ 10/16Wire, Brown & Sharpe's..... 25¢  
Wire, Morse's..... 30¢ @ 10¢  
Wire P. S. & W. Co..... 30¢ @ 10¢**Cimlets—**  
Nail, Metal, Assorted, gro. \$1.10 @ 1.16  
Spike, Metal, Assorted, gro. \$2.80 @ 3.25  
Nail, Wood Handled, Assorted, gro. \$1.75 @ 2.00  
Spike, Wood Handled, Assorted, gro. \$3.25 @ 3.50**Glass American Window**  
Jobbers' List, Dec. 16, 1902  
From store, Single and Double 90¢ @ 10¢  
F. O. B. factory, curtail lots:  
Single and Double..... 30¢ @ 20¢ 4¢  
2000 glue lots..... 90¢ @ 25¢**Glue—Liquid, Fish—**  
List A, Bottles or Cans, with Brush..... 37 1/2 @ 50¢  
List B, Cans (1/2 pte. pts., qts.) 33¢ @ 18¢  
List C, Cans (1/2 gal., gal.)..... 35¢ @ 15¢  
International Glue Co. (Martha's)..... 48¢ @ 25¢**Grease, Axle—**  
Common Grade..... gro. \$5.00 @ 5.00  
Dixon's Everlasting, 10-lb pails, ea. 35¢  
Dixon's Everlasting, in bxs., per doz. 1 lb..... \$1.20; 2 lb \$3.00**Griddles, Soapstone—**  
Pike Mfg. Co..... 33¢ @ 33¢ 10¢**Grindstones—**  
Bicycle Emery Grinder..... \$6.50  
Bicycle Grindstones, each..... \$2.50 @ 3.00  
Pike Mfg. Co.:  
Improved Family Grindstone..... per inch, per doz. \$2.00 (30¢)  
Pike Mow's Knife and Tool Grinder, each..... \$1.00  
Velox Ball Bearing, mounted, Angle Iron Frames..... each, \$3.25**Guards Snow—**  
Cleveland Wire Spring Co.:  
Galv. Steel # 1000..... \$9.00  
Copper # 1000..... \$18.00**Halters and Ties—**  
Covert Mfg. Co.:  
Web..... 45¢ @ 25¢  
Jute Rope..... 40¢ @ 5¢ 25¢  
Sisal Rope..... 20¢ @ 5¢  
Covert's Saddlery Works:  
Web and Leather Halters..... 70¢  
Jute and Manila Rope Halters..... 70¢  
Sisal Rope Halters..... 70¢  
Jute, Manila and Cotton Rope Ties..... 70¢  
Sisal Rope Ties..... 60¢ @ 10¢**Hammers—**  
Handled Hammers—  
Heller's Machinists'..... 40¢ @ 10¢ 40¢ @ 10¢ 10¢  
Heller's Farriers'..... 40¢ @ 10¢ 40¢ @ 10¢ 10¢  
Magnetic Tack, Nos. 1, 2, 3, \$1.35, \$1.50, \$1.75..... 40¢ @ 10¢ 40¢ @ 10¢ 10¢  
Peck, Stow & Wilcox..... 50¢  
Fayette R. Plumb:  
Plumb, A. E. Nail..... 30¢ @ 10¢ 30¢ @ 10¢ 7¢ 1/2  
Engineers' and B. S. Hand..... 50¢ @ 10¢ 50¢ @ 10¢ 7¢ 1/2  
Machinists' Hammers..... 30¢ @ 10¢ 30¢ @ 10¢ 5¢  
Riveting and Tappers'..... 40¢ @ 10¢ 40¢ @ 10¢ 2¢ 1/2  
Sargent's C. S. New List..... 40¢**Heavy Hammers and Sledges—**  
5 lb. and under..... lb. 45¢ 75¢ @ 5¢ 75¢  
2 to 5 lb..... lb. 35¢ 40¢ @ 5¢  
Over 5 lb..... lb. 30¢  
Wilkinson's Smiths'..... 50¢ @ 10¢ 10¢ lb.**Handles—**  
Agricultural Tool Handles—  
Aze, Pick, &c..... 50¢ @ 50¢ 10¢ 5¢  
Hoe, Rake, &c..... 50¢ @ 50¢ 10¢ 5¢  
Fork, Shovel, Spade, &c.:  
Long Handles..... 60¢  
D Handles..... 50¢**Cross-Cut Saw Handles—**  
Atkins'..... 40¢ @ 5¢  
Champion..... 40¢ @ 5¢ 10¢  
Disston's..... 50¢**Mechanics' Tool Handles—**  
Auger, assorted..... gro. \$2.30 @ \$2.50  
Brad Axl..... gro. \$1.75 @ \$1.50  
Chisel Handles:  
Apple Tanged Firmer, gro. ass'd..... \$2.25 @ \$2.35; large, \$2.50 @ \$2.60  
Hickory Tanged Firmer, gro. ass'd..... \$1.75 @ \$2.20; large, \$3.50 @ \$3.70  
Apple Socket Firmer, gro. ass'd..... \$1.70 @ \$1.85; large, \$3.00 @ \$3.25  
Hickory Socket Firmer, gro. ass'd..... \$1.60 @ \$1.75; large, \$1.75 @ \$2.00  
Hickory Socket Framing, gro. ass'd..... \$2.50 @ \$2.75; large, \$2.65 @ \$2.85  
File, assorted..... gro. \$1.00 @ \$1.15  
Hammer, Hatchet, Aze, &c..... 50¢  
Hand Saw, Varnished, doz. 70¢ 75¢  
Not Varnished..... 55¢ @ 60¢  
Plane Handles:  
Jack, doz. 35¢; Jack Bolted..... 55¢ @ 60¢  
Fore, doz. 35¢ @ 38¢; Fore, Bolted..... 70¢ 75¢  
Millers Falls Adj. and Ratchet Auger Handles..... 15¢ @ 10¢  
Nicholson Simplicity File Handle, per doz..... \$0.85 @ \$1.20**Hangers—**  
Barn Door, New England Pattern, Groove, Regular:  
Inch..... 5 4 5 6 8  
Single Doz. \$0.85 1.20 1.50 1.90 2.30**Barn Door, New England Pattern, Check Back, Regular:**Inch..... 3 4 5 6  
Single Doz..... \$1.10 1.60 2.15 2.70**Allth Mfg. Co.**  
Reliable..... per doz. \$15.00**Chicago Spring Butt Co.:**  
Friction..... 25¢  
Oscillating..... 25¢  
Big Twin..... 25¢  
Chisholm & Moore Mfg. Co.:  
Baggage Car Door..... 50¢  
Elevator..... 40¢  
Railroad..... 55¢  
Cronk & Carrier Mfg. Co.:  
Loose Axle..... 60¢  
Roller Bearing..... 60¢ @ 10¢**Lane Bros. Co.:**  
Parlor Ball Bearing..... \$4.15  
Parlor, Standard..... \$3.35  
Parlor, New Model..... \$2.85  
Parlor New Champion..... \$2.25  
Barn Door, Standard, 50¢ @ 10¢ 50¢  
Covered..... 50¢ @ 10¢ 50¢  
Special..... 50¢ @ 10¢ 50¢  
Lawrence Bros.:  
Advance..... 60¢  
Cleveland..... 60¢ @ 10¢  
Crown..... 60¢  
Giant..... 50¢ @ 10¢  
New York..... 60¢  
Peerless..... 60¢ @ 10¢  
Sterling..... 60¢  
Swing, No. 95..... 50¢ @ 10¢  
Union, No. 44, \$5.00; No. 45 \$7.00; No. 46, \$9.00.**McKinney Mfg. Co.:**  
No. 1, Special, \$15..... 60¢ @ 10¢  
No. 2, Standard, \$18..... 60¢ @ 10¢  
Hinged Hangers, \$16..... 50¢  
Meyers' Stays Hangers, 50¢ @ 10¢ (net)  
C. S. Smith Mfg. Co.:  
Lundy Parlor Door..... 50¢ @ 10¢  
Monarch Barn Door..... 60¢ @ 10¢  
Never Jam Hinge..... 50¢ @ 10¢  
Peerless..... 60¢ @ 10¢  
Perfection..... 70¢ @ 5¢  
Phoenix..... 70¢ @ 5¢  
Wagner's Adjustable..... 70¢ @ 10¢  
Warehouse Anti-Friction..... 60¢  
Stowell Mfg. and Foundry Co.:  
Acme Parlor Ball Bearing..... 40¢  
Atlas..... 60¢  
Badger Barn Door..... 50¢  
Baggage Car Door..... 50¢  
Climax Anti-Friction..... 50¢  
Express..... 50¢  
Interstate..... 40¢  
Lundy Parlor Door..... 50¢  
Magie..... 50¢  
Matchless..... 60¢  
Nansen..... 60¢ @ 10¢  
Railroad..... 50¢  
Street Car Door..... 50¢  
Steel, Nos. 300, 404, 500..... 40¢ @ 15¢  
Stowell Parlor Door..... 50¢  
Zell West, Nos. 300, 401, 500..... 50¢  
Zenith for Wood Track..... 50¢  
A. L. Sweet Iron Works:  
Eagle..... 60¢ @ 10¢  
Hylco..... 50¢ @ 10¢  
Perfection..... 60¢  
Pilot..... 25¢  
Taylor & Boggs Fy Co. 50¢ @ 15¢ 10¢  
Wilcox Mfg. Co.:  
Bike Roller Bearing..... 60¢ @ 10¢  
C. J. Miller Bearing..... 60¢ @ 10¢  
Cycle Ball Bearing..... 50¢  
Dwarf Ball Bearing..... 40¢  
Ives, Wood Track..... 60¢ @ 10¢  
L. R. Roller Bearing..... 60¢ @ 10¢  
New Era Roller Bearing..... 60¢ @ 10¢  
O. K. Roller Bearing..... 60¢ @ 10¢ 5¢  
Prindle, Wood Track..... 60¢  
Richards' Wood Track..... 60¢  
Richards' Steel Track..... 50¢ @ 10¢  
Spencer Roller Bearing..... 60¢ @ 10¢  
Tandem, Nos. 1 and 2..... 60¢  
Underwriters' Roller Bearing..... 40¢  
Velvet..... 50¢  
Wilcox Auditorium Ball Bearing..... 30¢  
Wilcox Barn Trolley No. 123..... 40¢  
Wilcox Elevator Door Hangers, Nos. 112 and 124..... 50¢  
Wilcox Fire Trolley, Roller Bearing..... 30¢  
Wilcox Le Roy Noiseless Ball Bearing..... 60¢  
Wilcox New Century..... 60¢ @ 10¢  
Wilcox O. K. Steel Track..... 50¢  
Wilcox O. K. Trolley..... 50¢  
Wilcox Trolley Ball Bearing..... 40¢  
Wilcox Wideman Narrow Gauge Ball Bearing..... 40¢  
For Track, see Rail.**Hasps—**  
McKinney's Perfect Hasp, per doz..... 50¢  
Wrought Hasps, Staples, &c.—See Wrought Goods.**Hatchets—**  
Best Brands..... 50¢ @ 50¢ 10¢  
Cheapie Brands..... 10¢ @ 60¢ 10¢  
Note—Net prices often made.**Hinges—**  
Blind and Shutter Hinges—  
Surface Gravity Locking Blind:  
(Victor; National; 1833 O. P. Niagara; Clark's O. P.; Clark's Tip; Buffalo.)  
Doz. pair..... \$0.35 1.75 3.50**Mortise Shutter:**  
(L. & P. O. S. Dixie, &c.)  
No..... 1 1 1/2 2 2 1/2  
Doz. pair..... \$0.70 1.50 2.00 2.50**Mortise Reversible Shutter, (Buffalo, &c.)**  
No..... 1 1 1/2 2  
Doz. pair..... \$0.75 1.70 2.50**North's Automatic Blind Fixtures, No. 2, for Wood, \$0.00; No. 3, for Brick, \$1.00**  
Parker..... 70¢ @ 75¢  
Reading's Gravity..... 75¢ @ 10¢  
Sargent's, Nos. 1, 3, 5, 11 & 13..... 70¢ @ 70¢ 20¢  
Stanley's Steel Gravity Blind Hinges, per doz. sets, without screws, \$1.50 with screws, \$1.15.  
Wrightsville Hardware Co.:  
O. S. Lull & Porter..... 7 & 5¢**Acme, Lull & Porter..... 75¢**  
Queen City Reversible..... 75¢  
Stenger's Positive Locking, Nos. 1 & 2..... 70¢ @ 10¢  
Shepard's Noiseless, Nos. 50, 60, 55..... 70¢ @ 10¢  
Niagara, Gravity Locking, Nos. 1, 3 & 5..... 75¢  
Old Pat'n, Nos. 1, 3 & 5..... 75¢  
Tip Pat'n, Nos. 1, 3 & 5..... 75¢  
Buffalo Gravity Locking, Nos. 1, 3 & 5..... 75¢  
Shepard's Double Locking, Nos. 30 & 25..... 70¢  
Champion Gravity Locking, No. 75..... 75¢  
Steamboat Gravity Locking, No. 10..... 75¢  
Pioneer, Nos. 150, 45 & 54..... 75¢  
Empire, Nos. 101 & 103..... 70¢  
W. H. Co.'s Mortise Gravity Locking, No. 2..... 60¢**Gate Hinges—**  
Clark's or Shepard's—Doz. sets:  
No..... 1 2 3  
Hinges with Latches..... \$2.00 2.50 3.00  
Hinges only..... \$1.40 2.05 3.30  
Latches only..... 70 70 35**New England:**  
With Latch..... doz. \$2.50  
Without Latch..... doz. \$1.50  
Reversible Self-Closing:  
With Latch..... doz. \$1.80  
Without Latch..... doz. \$1.45**Western:**  
With Latch..... doz. \$1.80  
Without Latch..... doz. \$1.30  
Wrightsville Hardware Co.:  
Shepard's or Clark's, doz. sets, No. 2..... 2 3  
Hinges with Latches..... \$2.00 2.70 3.00  
Hinges only..... 1.40 2.05 3.30  
Latches only..... 70 70 35**Spring Hinges—**  
Holdback, Cast Iron, gro. \$9.70 @ 10.00  
Non-Holdback, Cast Iron gro \$7 @ 7.50  
J. Bardley  
Bardley's Patent Checking..... 15¢  
Bommer Bros.:  
Bommer Ball Spring Floor Hinges..... 40¢  
Bommer Spring Hinges..... 40¢  
Keane's Spring Butt Co.:  
Chicago Spring Hinges..... 25¢  
Triple End Spring Hinges..... 50¢  
Chicago (Ball Bearing) Floor Hinges..... 45¢  
Garden City Engine House..... 25¢  
Keane's Salsor Door..... 35¢  
Columbia Hdw. Co.:  
Acme, Wrt. Steel..... 30¢  
Acme, Brass..... 20¢ @ 15¢  
American..... 30¢  
Columbia, No. 14..... \$1.00  
Columbia, No. 18..... \$1.25  
Columbia, Adjustable, No. 7..... \$1.00  
Gem, new list..... 30¢  
Clover Leaf..... \$1.25  
Oxford, new list..... 30¢  
Hoffman Hinge & Foundry Co.:  
No. 70, 75, Holdback Detachable \$9.00  
Lawson Mfg. Co.:  
Matchless..... 35¢  
Matchless Pivot..... 45¢  
Shelby Spring Hinge Co.:  
Crown Jamb Hinge..... 40¢  
Chief Ball Bearing Floor Hinge..... 45¢  
Royal Ball Bearing Floor Hinge..... 15¢  
The Stover Mfg. Co.:  
Ideal, No. 16, Detachable, per \$12.50  
Ideal, No. 4..... \$1.00  
New Idea No. 1..... \$1.00  
New Idea, Double Acting..... 45¢**Wrought Iron Hinges—**  
Strap and T Hinges, &c., list Mar. 15, 1901:  
Light Strap Hinges..... 70¢  
Heavy Strap Hinges..... 75¢ @ 10¢  
Light T Hinges..... 60¢ @ 10¢  
Heavy T Hinges..... 60¢ @ 10¢  
Extra Heavy T Hinges..... 75¢  
Hinge Hasps..... 55¢  
Cor. Heavy Strap..... 75¢ @ 10¢  
Cor. Ez. Heavy T..... 75¢  
Screw Hook, 1/2 to 20 in..... lb. 3¢ @ 10¢  
And Strap, 1/2 to 36 in..... lb. 5¢  
Screw Hook and Eye:  
1/2 to 1 inch..... lb. 5¢  
1/2 inch..... lb. 6¢  
1/2 inch..... lb. 7¢**Miscellaneous—**  
Hoffman's Steel Spring Butt Hinges..... 40¢ @ 10¢  
Hoffman's Offset Refrigerator Hinges..... 40¢ @ 10¢  
Hitchers, Stall—  
Covert Mfg. Co., Stall Hitchers..... 35¢**Hods Co.**  
15 10 17 18 inch.  
Galv. Open..... \$2.50 3.75 5.00 5.25 per doz.  
Jap. Open..... \$2.00 2.25 2.50 2.75 per doz.  
Galv. Funnel..... \$2.50 3.75 5.00 5.25 per doz.  
Jap. Funnel..... \$2.50 3.75 5.00 5.25 per doz.**Masons, Etc.—**  
Cleveland Wire Spring Co.:  
Steel Wire..... each \$1.45  
Steel Bricks..... each \$1.10  
Hoffman's:  
Brick..... each \$1.10  
Mason's..... each \$2.00  
Plasterers'..... each \$3.20**Hoes—**  
Eye—  
Scovill and Oval Pattern..... 60¢ @ 10¢ 60¢ @ 10¢ 10¢  
Grub, list Feb. 23, 1899..... 70¢ @ 70¢ 10¢  
D. & H. Scovill..... 35¢**Handled—**  
Aug. 1, 1899, List:  
Garden..... 70¢ @ 10¢  
Meadow and Rhode Island..... 75¢ @ 10¢  
Southern Meadow..... 75¢ @ 10¢  
Mortar and Street..... 75¢ @ 10¢  
Planters', Regular Pat'n..... 70¢ @ 10¢  
Cotton..... 75¢ @ 10¢  
Toy, Ladies', Rhode Island, Turnip, Berry, Tobacco..... 70¢ @ 10¢  
Note.—Manufacturers and jobbers use a diversity of Hods, and often sell at net prices.  
Ft. Madison Cotton Hoe..... 75¢ @ 75¢  
Ft. Madison Crescent Cultivator Hoe, per doz..... 75¢ @ 10¢  
Ft. Madison Mattock Hoes..... 75¢ @ 10¢  
Regular Weight..... per doz. \$5.00  
Junior Size..... per doz. \$4.00**Ft. Madison Sprouting Hoe, per doz. \$4.60**  
Ft. Madison Dixie Tobacco Hoe..... 75¢ @ 10¢  
Kretzinger's Cut Easy..... 70¢ @ 10¢  
Warren Hoe..... 75¢ @ 10¢  
W. & C. Ivanhoe..... 75¢ @ 10¢  
R. B. Cultivator Hoe..... 75¢ @ 10¢  
Acme Weeding..... 75¢ @ 10¢  
W. & C. Lightning Shovel Hoe, per doz. \$4.85**Hoisting Apparatus—**  
See Machines, Hoisting.  
**Holders—**  
Angular, per doz. \$24.00..... 45¢ @ 10¢  
**Door—**  
Empire..... 50¢**File and Tool—**  
Nicholson File Holders and File Handles..... 33¢ @ 45¢**Hooks—**  
Cast Iron—  
Bird Cage, Reading..... 60¢  
Bird Cage, Sargent's List..... 60¢  
Ceiling, Sargent's List..... 40¢ @ 10¢  
Clothes Line, Hoffman's..... 40¢ @ 10¢  
Clothes Line, Reading List..... 65¢ @ 10¢ 50¢ @ 10¢ 10¢  
Clothes Line, Sargent's List..... 45¢ @ 10¢  
Coat and Hat, Sargent's List..... 45¢ @ 10¢  
Coat and Hat, Stowell's..... 70¢  
Coat and Hat, Reading..... 70¢ @ 75¢  
Coat and Hat, Wrightsville..... 65¢  
Harris, Hoffman..... per doz. 35¢ @ 40¢  
Harness, Reading List..... 70¢ @ 10¢ 75¢**Wire—**  
Belt..... 30¢  
Wire C. & H. Hooks..... 60¢ @ 10¢ 60¢ @ 10¢ 60¢  
Atlas, Coat and Hat..... 50¢  
Single Cases..... 50¢ @ 10¢  
10 Case Lots..... 50¢ @ 10¢  
Czar Harness..... 50¢ @ 10¢ 50¢  
Wire Coat and Hat..... 40¢  
Acme..... 60¢  
B. B. Chief and Car..... 60¢  
Gem..... 60¢  
Bright Wire Goods—See Wire.**Wrought Iron—**  
Box, 6 in., per doz. \$1.00; 3 in., \$1.25; 10 in., \$2.50.  
Cotton..... doz. \$1.05 @ 1.25  
Wrought Staples, Hooks, &c.—See Wrought Goods.**Miscellaneous—**  
Bush, Light, doz. \$5.50; Medium, \$6.00; Heavy, \$6.50.  
Grass..... Nos. 1 2 3 4  
Best..... \$1.50 1.75 2.00  
Common..... \$1.50 1.50 1.50 1.50  
Potato and Manure..... 60¢ @ 10¢  
Whiffletree..... lb. 5¢ @ 10¢  
Hooks and Eyes:  
Brass..... 60¢ @ 10¢ 10¢ @ 70¢  
Malleable Iron..... 70¢ @ 5¢ 70¢ @ 10¢  
Covert Saddlery Works' Self Locking Gate and Door Hook..... 60¢  
Ft. Madison Cut-Easy Corn Hooks..... per doz. \$3.35 net 50¢ @ 10¢  
Crown Picture..... 50¢ @ 10¢  
Bench Hooks—See Bench Stops.  
Corn Hooks—See Knives, Corn.**Horse Nails—**  
See Nails, Horse.  
**Horseshoes—**  
See Shoes, Horse.**Hose Rubber—**  
Garden Hose, 1/2-inch:  
Competition..... ft. 4 1/2 @ 4 1/2  
S-ply Standard..... ft. 6 @ 6 1/2  
L-ply Standard..... ft. 7 1/2 @ 8 1/2  
L-ply extra..... ft. 8 1/2 @ 9 1/2  
L-ply extra..... ft. 10 1/2 @ 11 1/2  
Cotton Garden, 1/2-in., coupled:  
Low Grade..... ft. 6 @ 7 1/2  
Fair quality..... ft. 8 @ 9 1/2**Irons—**  
Sad—  
From 4 to 10..... lb. 3 1/2 @ 3 1/2  
B. B. Sad Irons..... lb. 3 @ 3 1/2  
Chinese Laundry..... lb. 4 1/2 @ 5 1/2  
Chinese Sad..... lb. 3 1/2 @ 4 1/2  
Mrs. Potts', per set:  
No..... 50 55 60 65  
Jap'd Tops..... 75¢ 71¢ 84¢ 81¢  
Tin'd Tops..... 77¢ 74¢ 87¢ 84¢  
New England Pressing, lb..... 3 1/2 @ 3 1/2**Pinking—**  
Soldering..... doz. 50¢ @ 60¢  
**Soldering—**  
Soldering Coppers 1/4 and 3/8..... 18¢ @ 19 1/2 and 2..... 20¢ @ 21¢  
Covert Mfg. Co..... 20¢ @ 21¢**Jacks, Wagon—**  
Covert Mfg. Co.:  
Auto Screw..... 30¢ @ 5¢  
Steel..... 45¢ @ 2¢  
Covert's Saddlery Works'..... 60¢ @ 10¢  
Victor..... 60¢ @ 10¢  
Lockport..... 50¢  
Lane & Steel..... 30¢ @ 10¢**Kettles—**  
Brass, Spun, Plain..... 20¢ @ 25¢  
Enamelled and Cast Iron—See Ware, Hollow.**Knives—**  
Butcher, Kitchen, &c.—  
Foster Bros' Butcher, &c..... 30¢  
Hartzell Cutlery Co..... 50¢  
Smith & Hemenway Co..... 10¢ @ 10¢  
Hay and Straw—See Hay, Knives.**Corn—**  
Withington Acme, per doz. \$2.65; Dent, \$2.75; Adj. Serrated, \$2.20; Serrated, \$2.10; Yankee No. 1, \$1.50; Yankee No. 2, \$1.15.**Drawing—**  
Standard List..... 70¢ @ 5¢ 70¢ @ 10¢  
Bradley's..... 70¢ @ 10¢  
C. E. Jennings & Co. Nos. 45, 46, 80¢ @ 10¢  
Jennings & Griffin, Nos. 51, 52, 60¢ @ 10¢  
Svan's..... 70¢ @ 10¢ 21¢  
Watrous..... 16¢ @ 10¢  
L. & J. White..... 20¢ @ 25¢**Lighting—**  
White and Straw..... per doz. \$6.50 @ 7.00  
Iwan's Sickle Edge..... per doz. \$10.00  
Iwan's Serrated..... per doz. \$10.00  
Maine..... per doz. \$8.50



<b>Mining—</b>	
Buffalo .....	gro. \$13.00
<b>Miscellaneous—</b>	
Farriers' .....	doz. \$2.00 @ 3.00
Wostenholm's .....	doz. \$3.00 @ 3.25
<b>Knobs—</b>	
Base, 2½-inch, Birch, or Maple,	
Carriage tip, gro. ....	\$1.10 @ 1.20
Carriage, Jap. all sizes, gro.	25 @ 30c
Door, Mineral, .....	doz. 65 @ 70c
Door, Por. Jap'd, .....	doz. 70 @ 75c
Door, Por. Nickel, .....	doz. \$2.05 @ 2.15
Bardsley's Wood Door, Shutter, &c.	15c
Picture, Sargent's, .....	60 @ 10c
<b>Leather—</b>	
See Belting Leather—	
<b>Ladders Step Etc.—</b>	
Lane's Store, .....	25c
Myers' Noisies, Store Ladders, ..	30c
<b>Ladies— Melting—</b>	
L. & G. Mfg. Co., .....	25c
P. & W. Mfg. Co., .....	60c
Reading, .....	60c
Sargent's, .....	45 @ 10c
<b>Lanterns— Tubular—</b>	
Regular Tubular, .....	doz. \$1.35 @ 1.75
Light Tubular, .....	doz. \$1.75 @ 2.25
Hinge Tubular, .....	doz. \$1.75 @ 2.25
Other Styles, .....	10c @ 10c @ 10c @ 10c
<b>Bull's Eye Police—</b>	
No. 1, 2½ inch, .....	\$2.50 @ 2.75
No. 2, 3 inch, .....	\$2.75 @ 3.00
<b>Latches— Gate—</b>	
Hoffman's Safety Gate, .....	doz. 80c
<b>Thumb—</b>	
Roggin's Latches, with screw, dz	35 @ 40c
<b>Leaders— Cattle—</b>	
Small, .....	doz. 55c; large, 60c
Covert Mfg. Co., .....	\$3.25
<b>Lifters, Transom—</b>	
R. & E., .....	33c @ 40c
<b>Lines—</b>	
Wire Clothes, Nos. 18 19 20	
100 feet, .....	\$2.20 2.00 1.65
75 feet, .....	\$1.80 1.70 1.30
<b>Ossawa Mills—</b>	
Crown Solid Braided Chalk, ..	33c @ 40c
Mason's, No. 0 to No. 5, ..	33c @ 40c
Samson Cordage Works, ..	
Solid Braided Chalk, No. 0 to 3, ..	40c
Silver Lake Braided Chalk, No. 0, ..	60c @ 60c
No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50	1c gr.
<b>Locks— Cabinet—</b>	
Cabinet Locks, .....	33c @ 35c @ 40c
<b>Door Locks, Latches, &amp;c.—</b>	
[Not prices are very often made on	these goods.]
Reading Hardware Co., .....	60c
R. & E. Mfg. Co., .....	40c
Sargent & Co., .....	40 @ 40c @ 10c
<b>Elevator—</b>	
Stowell's, .....	40c
<b>Padlocks—</b>	
Wrought Iron, .....	7c @ 10c @ 10c @ 10c
R. & E. Mfg. Co. Wrt. Steel and brass,	75 @ 75c @ 10c
<b>Sash, &amp;c.—</b>	
Ives' Patent, .....	55c @ 7c
Cr. & Co., .....	50c
Iron, .....	60c @ 7c
Wrought Bronze and Brass, ..	60c @ 7c
Wrought Steel, .....	35c
Reading, .....	60c @ 10c @ 10c @ 70c
<b>Machines— Boring—</b>	
Com., Upright, Without Augers, ..	\$2.00
Com., Angular, Without Augers, ..	\$2.25
Without Augers, .....	
R. & E. Mfg. Co.: Upright, Angular,	
Improved No. 3, \$4.25 No. 1, \$5.00	
Improved No. 4, 3.75 No. 2, 3.38	
Improved No. 6, 2.75	
Jennings', No. 4, 3.15 No. 1, 3.50	
Muller's Falls, .....	6.75
Snell's Rice's Pat. 2.50	6.75
<b>Holisting—</b>	
Moore's Anti-Friction Differential Pul-	ley Block, .....
Moore's Hand Hoist, with Lock Brake, ..	30c
Moore's Portable Pneumatic Hoist, ..	35c
<b>Ice Cutting—</b>	
Chandler's, .....	15c @ 10c
<b>Mallets—</b>	
Hickory, .....	45c @ 50c
Lignumvite, .....	45c @ 50c
Tinners', Hickory and Applewood,	doz. ....
doz. ....	60 @ 50c
<b>Mats— Door—</b>	
Elastic Steel (W. G. Co.), .....	10c
<b>Mattocks—</b>	
See Picks and Mattocks,	
<b>Menders, Hose,</b>	
Robinson's Hose Menders, .....	gr. \$2.00
<b>Milk Cans— See Cans, Milk</b>	
<b>Mills— Coffee, etc.—</b>	
Enterprise Mfg. Co., .....	25 @ 30c
Hoffman's Side, Coffee and Spice, ..	doz. \$1.25
National, List Jan. 1, '94, .....	30c
Parker's Columbia & Victoria, 50c @ 10c	40c
Parker's Box and Side, .....	50c @ 10c @ 40c
Swift, Lane Bros Co., .....	30c
<b>Mowers Lawn—</b>	
Net prices are generally quoted,	
Cheap, .....	all sizes, \$1.30 @ 1.95
Good, .....	all sizes, \$2.25 @ 2.50
10 12 14 16-inch	
High Grade L. 25 4.50 4.75 5.00	
Continental, .....	60c @ 10c
Great American, .....	60c @ 10c
Great American Ball Bearing, ..	70c
Quaker City, .....	70c
Pennsylvania, .....	60c @ 10c
Pennsylvania Ball Bearing, ..	60c @ 5c
Pennsylvania Golf, .....	50c
Pennsylvania Horse, .....	40c
Pennsylvania Pony, .....	45c

<b>Philadelphia:</b>	
Styles M. S. C. K. T., .....	70c @ 5c
Style A, all Steel, .....	60c @ 10c
Style E, Low Wheel, .....	60c @ 10c
Style E, High Wheel, .....	70c @ 10c @ 5c
Drexel and Gold Coin, low list, ..	50c @ 5c
<b>Nails—</b>	
Cut and Wire. See Trade Report,	
Wire Nail and Brads, Papered,	
List July 20, 1899, .....	
85c @ 10c @ 10c @ 85c @ 10c @ 10c	
<b>Hungarian, Finishing, Upholster-</b>	
ers', &c. See Tacks,	
<b>Horse—</b>	
Nos. 6 7 8 9 10	
A. C., .....	25c @ 25c @ 25c @ 21c @ 21c @ 40c @ 5c
Ausable, .....	25c @ 25c @ 25c @ 24c @ 25c @ 50c @ 10c
C. B. K., .....	25c @ 25c @ 25c @ 21c @ 21c @ 40c
Champion, .....	25c @ 25c @ 25c @ 24c @ 23c @ 40c @ 5c
Cut, .....	10c @ 1c @ 10c @ 15c @ 14c @ 10c @ 5c
Maud S., .....	25c @ 25c @ 25c @ 21c @ 21c @ 50c
Putnam, .....	23c @ 21c @ 20c @ 19c @ 18c @ 33c @ 5c
Putnam, .....	23c @ 21c @ 20c @ 19c @ 18c @ 33c @ 5c
Cold Roll'd, .....	10c @ 10c @ 10c @ 10c @ 10c @ 10c @ 10c
American, Nos. 5 to 10, ..	10c @ 10c @ 10c @ 10c @ 10c @ 10c @ 10c
Neponset, .....	Nos. 5 to 10c @ 10c @ 10c @ 10c @ 10c @ 10c @ 10c
Jobbers' special brands, ..	per lb. 8c @ 9c
<b>Picture—</b>	
1½ 2 2½ 3 3½ in.	
Brass Head, .....	1.50 1.00 1.00 1.00 1.00 1.00 1.00
Por. Head, .....	1.10 1.10 1.10 1.10 1.10 1.10 1.10
Crown Picture Nails, .....	gr. \$1.50
<b>Nippers, See Pliers and Nippers.</b>	
<b>Nuts—</b>	
Cold Punched: .....	Off list.
Mfrs. or U. S. Standard, ..	
Square, plain, .....	\$1.50
Hexagon, plain, .....	\$1.50
Square, C. T. & R., .....	\$1.70
Hexagon, C. T. & R., .....	\$1.70
Hot Pressed: .....	
Mfrs., U. S. or Nar. Gauge Stand,	
Square Blank, .....	\$5.00
Hexagon Blank, .....	\$5.00
Square Tapped, .....	\$4.80
Hexagon Tapped, .....	\$5.00
<b>Oakum—</b>	
Best or Government, .....	lb. 6½c
Navy, .....	lb. 6c
U. S. Navy, .....	lb. 6½c
Plumbers' Spin Oakum, ..	6½c
In carload lots ¼c lb. off f.o.b. New	York.
<b>Oil Tanks—See Tanks, Oil,</b>	
<b>Oilers—</b>	
Brass and Copper, .....	65 @ 65c @ 10c
Tin or Steel, .....	70c @ 10c @ 75c
Zinc, .....	75c @ 75c @ 5c
Chase or Paragon: .....	
Brass and Copper, .....	65c @ 65c @ 10c
Tin or Steel, .....	75c @ 75c @ 10c
Zinc, .....	75c @ 75c @ 10c
Malleable, Hammers' Improved, No. 1,	\$3.80; No. 2, \$4; No. 3, \$4.40
Malleable, Hammers' Old Pattern,	same list, .....
American Tube & Stamping Co., ..	50c @ 10c
Spring Bottom Cans, .....	70c @ 10c
Railroad Oilers etc., .....	80c @ 10c
<b>Openers— Can—</b>	
French, .....	doz. 35c
Iron Handle, .....	doz. 2c @ 2c
Sprague, Iron Hdl., .....	per doz 35c @ 40c
Sardine Scissors, .....	doz. \$1.75 @ 3.00
Marvel, .....	per doz. \$1.25
National, .....	50c
Stowell's, .....	per doz. 35c @ 40c
Tip Top, .....	per doz. \$0.75
<b>Egg—</b>	
Nickel Plate, .....	per doz. \$2.25
Silver Plate, .....	per doz. \$3.50
<b>Packing—</b>	
Asbestos Packing, Wick and Rope,	1c @ 15c @ 15c @ 15c
<b>Rubber—</b>	
Sheet, C. I., .....	8c @ 12c
Sheet, C. O. S., .....	9c @ 15c
Sheet, C. B. S., .....	10c @ 15c
Sheet, Pure Gum, .....	50c @ 70c
Sheet, Red, .....	50c @ 70c
Jenkins' Standard, .....	50c @ 70c
<b>Miscellaneous—</b>	
American Packing, .....	7c @ 10c @ 10c
Cotton Packing, .....	15c @ 15c @ 15c
Italian Packing, .....	9c @ 12c @ 15c
Jute, .....	3c @ 10c @ 10c
Russia Packing, .....	7c @ 11c @ 15c
<b>Pails— Creamery</b>	
S. S. & Co., with gauges, No. 1, ..	\$0.25
No. 2, \$0.50 with doz.	
<b>Galvanized—</b>	
Price per doz.	
Quart, .....	10 12 14
Water, Regular, .....	1.75 2.00 2.25
Water, Heavy, .....	2.75 3.00 3.25
Fire, Rd. Bottom, .....	2.30 2.60 2.90
Well, .....	2.25 2.50 2.75
<b>Pans— Dripping—</b>	
Standard List, .....	60c @ 50c @ 60c @ 10c
<b>Fry—</b>	
Common Lipped: .....	
No. 1 2 3 4 5	
Per doz. \$0.95 1.05 1.15 1.30 1.55	
<b>Roasting and Baking—</b>	
Regal, S. S. & Co., .....	Nos. 5, \$4.50;
10, \$5.25; 20, \$5.75; 30, \$6.25.	
Simplex, .....	doz.
No. 40 50 60 140 150 160	
\$2.75 3.25 3.75 3.00 3.25 4.00	
<b>Paper—Building Paper—</b>	
Asbestos, .....	lb.
Building Felt, .....	3c @ 4c
Mill Board, sheet, 50 x 40 inches 3 c	
Mill Board, roll, thicker than 1-16	inch, .....
inch, .....	3c @ 4c
Mill Board, roll, 1-16 in. thick and	less, .....
less, .....	3c @ 4c

Rosin Sized Sheathing: .....	500 sq. ft.	Per roll
Light wt., 25 lbs. to roll, .....	\$0.35 @ 0.37	
Medium wt., 30 lbs. to roll, .....	\$0.40 @ 0.45	
Heavy wt., 40 lbs. to roll, .....	\$0.50 @ 0.60	
Medium Grades Water Proof		
Sheathing .....	\$0.65 @ 1.25	
Deafening Felt, 3, 6 and 1½ sq. ft.		
to lb., ton .....	\$4.50	
Red Rope Roofing, 250 sq. feet per		
roll .....	\$1.65	
NOTE.—These goods are often sold at		
delivered prices.		
Tarred Paper.		
1 ply (roll 300 sq. ft.), ton .....	\$29.00 @ 32.00	
2 ply, roll 103 sq. ft. ....	55 @ 65c	
3 ply, roll 103 sq. ft. ....	77 @ 87c	
Slater's Felt (roll 500 sq. ft.), ..	70 @ 75c	
NOTE.—Above prices often include de-		
livery.		
R. R. M. Stone Surfaced Roofing (roll	110 sq. ft.), .....	\$2.75
Sand and Emery—		
List Dec. 23, 1899, .....	60 @ 60c @ 10c	
Parers— Apple—		
Advance .....	doz.	\$4.50
Baldwin .....	doz.	\$5.00
Bonanza Improved .....	each	\$0.50
Dandy .....	each	\$0.50
Eureka Improved .....	each	\$0.50
Family Bay State .....	doz.	\$15.00
Improved Bay State .....	doz.	\$36.00
New Lightning .....	doz.	\$7.50
Reading 72 .....	doz.	\$4.00
Reading 75 .....	doz.	\$7.00
Turn Table 16 .....	doz.	\$6.75
White Mountain .....	doz.	\$6.00
Potato—		
Saratoga .....	doz.	\$7.00
White Mountain .....	doz.	\$6.00
Paris Green—		
Less than 1 ton, .....	per lb.	
Arsenic kegs or casks, .....	12½c	
Kegs, 100 to 175 lbs. ....	13c	
Kits, 1½, 25, 50 lbs. ....	12c	
Paper boxes, 2 to 5 lbs. ....	12c	
Paper boxes, 1 lb. ....	14½c	
Paper boxes, ¼ lb. ....	15c	
Paper boxes, 1/8 lb. ....	16c	
1 to 5 tons, 1 cent per lb. less; 5 tons		
and over, 1½ cents per lb. less.		
Picks and Mattocks—		
List Feb. 23, 1899, .....	70 @ 70c @ 10c	
Pinking Irons—		
See Irons, Pinking,		
Pins— Escutcheon—		
Brass .....	60c @ 80c @ 10c	
Iron, list Nov. 11, '85, .....	60c @ 80c @ 10c	
Pipe, Cast Iron Soil—		
Standard, 2-6 in. ....	60c @ 10c	
Extra Heavy, 2-6 in. ....	65c	
Fittings .....	7c	
Pipe Merchant, Boiler		
Tubes, &c.—		
Carload Lots,		
f. o. b. Pittsburgh, .....		
Merchant Pipe, Black, .....	Galva-	nized,
¾, 1, 1½, 2, 3, 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84, 90, 96, 102, 108, 114, 120, 126, 132, 138, 144, 150, 156, 162, 168, 174, 180, 186, 192, 198, 204, 210, 216, 222, 228, 234, 240, 246, 252, 258, 264, 270, 276, 282, 288, 294, 300, 306, 312, 318, 324, 330, 336, 342, 348, 354, 360, 366, 372, 378, 384, 390, 396, 402, 408, 414, 420, 426, 432, 438, 444, 450, 456, 462, 468, 474, 480, 486, 492, 498, 504, 510, 516, 522, 528, 534, 540, 546, 552, 558, 564, 570, 576, 582, 588, 594, 600, 606, 612, 618, 624, 630, 636, 642, 648, 654, 660, 666, 672, 678, 684, 690, 696, 702, 708, 714, 720, 726, 732, 738, 744, 750, 756, 762, 768, 774, 780, 786, 792, 798, 804, 810, 816, 822, 828, 834, 840, 846, 852, 858, 864, 870, 876, 882, 888, 894, 900, 906, 912, 918, 924, 930, 936, 942, 948, 954, 960, 966, 972, 978, 984, 990, 996, 1000		
¾, 1, 1½, 2, 3, 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84, 90, 96, 102, 108, 114, 120, 126, 132, 138, 144, 150, 156, 162, 168, 174, 180, 186, 192, 198, 204, 210, 216, 222, 228, 234, 240, 246, 252, 258, 264, 270, 276, 282, 288, 294, 300, 306, 312, 318, 324, 330, 336, 342, 348, 354, 360, 366, 372, 378, 384, 390, 396, 402, 408, 414, 420, 426, 432, 438, 444, 450, 456, 462, 468, 474, 480, 486, 492, 498, 504, 510, 516, 522, 528, 534, 540, 546, 552, 558, 564, 570, 576, 582, 588, 594, 600, 606, 612, 618, 624, 630, 636, 642, 648, 654, 660, 666, 672, 678, 684, 690, 696, 702, 708, 714, 720, 726, 732, 738, 744, 750, 756, 762, 768, 774, 780, 786, 792, 798, 804, 810, 816, 822, 828, 834, 840, 846, 852, 858, 864, 870, 876, 882, 888, 894, 900, 906, 912, 918, 924, 930, 936, 942, 948, 954, 960, 966, 972, 978, 984, 990, 996, 1000		
Less than carloads, 12½c advance.		
Pipe Sewer—		
Jobbers' Prices—		
Standard Pipe and Fittings, 2 to 24 in.		
New England .....	70c	
New York and New Jersey .....	75c	
Maryland, Delaware, East Penn. ....	75c	
West Penn. and West Va. ....	75c	
Virginia .....	75c	
Ohio, Michigan and Ky. ....	75c	
Carload lots are generally delivered.		
Pipe, Stove—		
Edwards' Nested Stove Pipe:		
5 in., per 100 joints ...	C. L.	L. C. L.
6 in., per 100 joints ...	8.00	9.00
7 in., per 100 joints ...	9.00	10.00
Planes and Plane Irons—		
Wood Planes—		
Bench, First quality 1½ @ 10 @ 1½ @ 10 @ 15		
Bench, Second qual. 50 @ 10 @ 50 @ 10 @ 15		
Molding .....	40 @ 1½ @ 40 @ 15	
Bailey's (Stanley R. & L. Co.)	5 @ 10 @ 25 @ 10 @ 10 @ 10	
Gage Self Setting .....	35c	
Union .....	60c	
Iron Planes—		
Bailey's (Stanley R. & L. Co.)	25 @ 10 @ 25 @ 10 @ 10	
Chaplin's Iron Planes .....	50 @ 10 @ 10	
Miscellaneous Planes (Stanley R. & L. Co.)	30 @ 10 @ 30 @ 10 @ 10	
Sargent's .....	60 @ 10 @ 60 @ 10 @ 10	
Union .....	60c	
Plane Irons—		
Wood Bench Plane Irons .....	30 @ 10 @ 30 @ 10 @ 10	
Buck Bros. ....	30 @ 10 @ 30 @ 10 @ 10	
Stanley R. & L. Co. ....	30 @ 10 @ 30 @ 10 @ 10	
L. & J. White .....	20 @ 10 @ 20 @ 10 @ 10	
Planters, Corn, Hand.		
Kohler's Eclipse .....	doz.	\$0.00
Plates—		
Felco .....	lb 5½ @ 10	
Self-Sealing Pie Plates (S. S. & Co.)	doz.	\$2.00
Pliers and Nippers—		
Button Pliers .....	75 @ 75c @ 10	
Gas Burner, per doz., 5 in., \$1.15 @		
\$1.20; 6 in., \$1.35 @ \$1.45		
Gas Pipe, 7 8 10 1½ in.		
\$1.75 \$2.00 \$2.75 \$3.75		
Acme Nippers .....	50 @ 50c @ 5	
Bernard's .....		
Parallel Pliers .....	95c	
Pin Pliers .....	60 @ 25 @ 10	
Lodi Pliers .....	50 @ 25	
Kim City Fence Pliers .....	50 @ 25	











FEBRUARY 11, 1903.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.